

**REMARKS**

Claims 15-18 are pending and under consideration.

The Examiner relies upon Kondo and Lownes. It is respectfully submitted that these are not proper references under 35 U.S.C. §103 insofar as they are not proper references under 35 U.S.C. §102.

As set forth in the attached Declarations under 37 C.F.R. 131(a), previously submitted with respect to the parent case (Ser. No. 09/179,872), the inventors signed an invention disclosure on May 16, 1997 which disclosed the recited invention. This disclosure was forwarded to prepare Korean Application Nos. 1997-29836, 1997-29839 and 1997-32239. Verified translations of the invention disclosure and the Korean Applications are submitted herewith. The date of the invention disclosure is prior to the filing date of Lownes et al., which is October 9, 1998. Similarly, Kondo is not a proper reference since the filing date thereof is June 30, 1998.

Accordingly, withdrawal of the rejections is requested.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

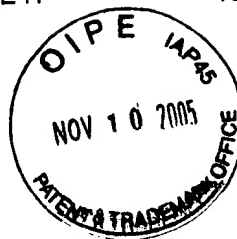
STAAS & HALSEY LLP

Date: 11-10-05

By: 

Michael J. Badagliacca  
Registration No. 39,099

1201 New York Avenue, NW, Suite 700  
Washington, D.C. 20005  
Telephone: (202) 434-1500  
Facsimile: (202) 434-1501

**DOCKET NO. 1317.1055/MDS/MJB****DECLARATION UNDER 37 C.F.R. 1.131(a)****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of:

Pan-Jin KIM

Serial No.: 09/179,872

Filed: October 28, 1998

Group Art Unit: 2611

Examiner: R. Brown

For: **METHOD FOR DISPLAYING CHANNEL INFORMATION AND SELECTING  
CHANNEL ON DIGITAL TELEVISION****Declaration Under Rule 131(a)**Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

I, Phil-Tae KIM, the joint Applicant in the above identified patent application declare as follows:

1. On 10/5/97, I signed an invention disclosure form disclosing the invention recited in the above identified patent application. A copy of the invention disclosure form, along with a statement that the translation of the invention disclosure form is accurate, is attached hereto.
2. On 11/5/97, this invention disclosure form was forwarded to the Korean Patent firm of K.J. Lee Patent & Trademark Office, to be prepared and filed as a U.S. Patent Application. A date stamp of receipt is shown on the invention disclosure form attached hereto.

**SERIAL NO.: 09/179,872****DOCKET NO. 1317.1055/MDS/MJB**

The Declarant further state that the above statements were made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statement may jeopardize the validity of this application or any patent resulting therefrom.

By: Kim, Phil-TaeDate: 7 July, 2003

Phil-Tae KIM

**DOCKET NO. 1317.1055/MDS/MJR****DECLARATION UNDER 37 C.F.R. 1.131(a)****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of:

Pan-Jin KIM

Serial No.: 09/179,872

Filed: October 28, 1998

Group Art Unit: 2611

Examiner: R. Brown

For: **METHOD FOR DISPLAYING CHANNEL INFORMATION AND SELECTING  
CHANNEL ON DIGITAL TELEVISION****Declaration Under Rule 131(a)**Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450


Dear Sir:

I, Pan-Jin KIM, the joint Applicant in the above identified patent application declare as follows:

1. On 10/5/1999 I signed an invention disclosure form disclosing the invention recited in the above identified patent application. A copy of the invention disclosure form, along with a statement that the translation of the invention disclosure form is accurate, is attached hereto.
2. On 2/5/1999, this invention disclosure form was forwarded to the Korean Patent firm of K.J. Lee Patent & Trademark Office, to be prepared and filed as a U.S. Patent Application. A date stamp of receipt is shown on the invention disclosure form attached hereto.

**SERIAL NO.: 09/179,872****DOCKET NO. 1317.1055/MDS/MJB**

The Declarant further state that the above statements were made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statement may jeopardize the validity of this application or any patent resulting therefrom.

By: Pan Jin Kim 

Pan-Jin KIM

Date: 21/7/2003

**DOCKET NO. 1317.1055/MDS/MJB****DECLARATION UNDER 37 C.F.R. 1.131(a)****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of:

Pan-Jin KIM

Serial No.. 09/179,872

Filed: October 28, 1998

Group Art Unit: 2611

Examiner: R. Brown

For: **METHOD FOR DISPLAYING CHANNEL INFORMATION AND SELECTING  
CHANNEL ON DIGITAL TELEVISION**

**Declaration Under Rule 131(a)**

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

I, Sik-Won JEONG, the joint Applicant in the above identified patent application declare as follows:

1. On 16/5/1997, I signed an invention disclosure form disclosing the invention recited in the above identified patent application. A copy of the invention disclosure form, along with a statement that the translation of the invention disclosure form is accurate, is attached hereto.
2. On 21/5/1997, this invention disclosure form was forwarded to the Korean Patent firm of K.J. Lee Patent & Trademark Office, to be prepared and filed as a U.S. Patent Application. A date stamp of receipt is shown on the invention disclosure form attached hereto.

**SERIAL NO.: 09/179,872****DOCKET NO. 1317.1055/MDS/MJB**

The Declarant further state that the above statements were made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statement may jeopardize the validity of this application or any patent resulting therefrom.

By: Jeong Sik Won

Date: 18 July, 2007

Sik-Won JEONG



## CERTIFICATE OF TRANSLATION

As a below named translator, I hereby declare that my residence and citizenship are as stated below next to my name and I hereby certify that I am conversant with both the English and Korean languages and the document enclosed herewith is a true English translation of the Invention Disclosure with respect to the Korean patent application No. 1997-29836 filed on 30 June 1997.

**NAME OF THE TRANSLATOR : KIM, Sook-Hee**

**SIGNATURE :** *Sook Hee Kim*

**Date :** 22 July 2003

**RESIDENCE :** MIHWA BLDG., 110-2, MYONGRYUN-DONG 4-GA, CHONGRO-GU, SEOUL 110-524, KOREA

**CITIZENSHIP :** REPUBLIC OF KOREA



## INVENTION DISCLOSURE

- DEPARTMENT: Corporate R & D Center  
(Signal Processing Lab)
- DATE OF REPORTING: 16 May 1997
- INVENTOR'S NAME: Pan-Jin KIM
- IDENTIFICATION NO.: 700916-1674227
- EMPLOYEE NO.: 94106077
- INVENTOR'S ADDRESS: Jugong 4-cha APT. #401-1312, Uman-dong, Paltal-gu, Suwon-shi, Kyonggi-do, Republic of Korea
- TITLE OF THE INVENTION: Method for displaying a channel information on digital TV
- SUBJECT MATTER OF THE INVENTION: displaying the number of the programs on the current channel when displaying the channel on digital TV
- EVALUATION RESULT OF THE INVENTION: Class of invention: A B (C)
  - \* A class (of 20 points or more), B class (of 16 points or more),  
C class (of 10 points or more), D class (below 10 points)
- KOREAN PATENT APPLICATION: Patent Application (O) Utility Model ( )
- FOREIGN PATENT APPLICATION: Yes ( ) No ( )
- REQUEST FOR SUBSTANTIVE EXAMINATION: Yes (O) No ( )
- AGENT: K.J.LEE PATENT & TRADEMARK OFFICE

**DRAFT OF SPECIFICATION ASSOCIATED WITH EMPLOYEE'S INVENTION****1. TITLE OF THE INVENTION**

5 Method for displaying a channel information on digital TV

**2. BACKGROUND OF THE INVENTION**

10 There has not been settled how to directly select a channel on a digital television when selecting a channel by using a digit key.

**4. DETAILED DESCRIPTION OF INVENTION**

15 Since the digital TV broadcasting system can broadcast a plurality of programs through a single channel, the new channel selecting method different from the existing analog TV broadcasting system is required, which is described below.

When directly selecting a channel using a digit key, the channel is designated in the same manner with the existing TV broadcasting system. If there are a plurality of programs, the user can check the number of programs through the current channel by such a way that the program of the lowest number is displayed on the TV screen and the OSG is displayed as below.



The above diagram shows that there are 4 programs on the currently selected channel "32".

25 On the above screen, the user can select the other programs by using the channel up or down key.

모성음

## 직무발명(고안)명세서

### 1. 발명(고안)의 명칭

1 발명(고안) 내용을 적절히 표현할 수 있는 명칭을 간단명료하게 기재함. + 전문용어, 약자는 가급적 피함.

예) 전자펜촉의 도어로그장치, 여상테크 음향기기의 연속음 제어 회로

### 2. 발명(고안)의 배경

[산업상 이용분야]

+ 200자 내외로 발명(고안)의 적용분야를 간결명료하게 일목하히 설명함.

현재 채널폭을 digital key로 direct 전송시 비필적으로  
direct 전송을 하는 한 지가 디지털 TV의 경우 정해진  
방식이다.

예) 본 발명(고안)은 ...하는 영상 재생장치(본문 Category)에 관한 것으로, 특히 ... (발명(고안)의 목적 기능) 할 수 있도록 한 ...에 관한 것임. (본문 Category)에 관한 것이다.

\* 국내우선권 주장여부  
(○× 표시)

( )

[종래 기술의 설명]

+ 가장 최근에 공지된 발명(고안)과 관련된 기술을 요약 설명함.

1. 기술종류  
(해당부분만  
선택하여  
기재)

(1) 유사특허 또는 출원

+ 해당특허의 출원번호(또는 등록번호), 명칭, 출원인 등을 기재하고 첨부함.

(2) 배경문헌 또는 제품

+ 문헌명, 해당Page, 발표년월, 발표자 등을 기재하고 첨부함. + 제품모델명, 제조회사, 제조년월일 기재함.

(3) 발명(고안)과 관련된  
본 발명자의 신출원

+ 선출원 번호, 출원일(반드시 기재바람), 명칭을 기재함.

예) 종래, ...에 관한 본 발명(고안)과 관련된 ...기술은 ...에 의해 공지된 특허출원 제90-1234호(명칭, 출원일)에 기재되어 있음.

예) ...기술과 관련된 종래기술은 ...에 의해 발표된 IEEE/1992년 10월, P12 5행에 서술됨.

예) ...기술과 관련된 종래기술은 ...에서 구입할 수 있는 1992년 5월, 유니(사) 제조 모델 P2836에 개시되어 있음.

예) ...에 관한 기술은 본 발명(고안)자의 특허출원 제 92-4321호(명칭, 출원일)에 서술되어 있음.

## 4. 발명(고안)의 상세한 설명

[발명(고안)의 구성] + 발명(고안)의 구성을 선택권 양호한 실시예의 도면과 연관하여 해당 기술분야의 통상의 지식을 가진자가 쉽게 이해할 수 있도록 설명함.

디지털 TV의 경우 현재에 여러 방송이 동시 전송이  
있으므로 기존의 채널 선택 방식과 다른 새로운 방식이  
필요하다. 그 방법은 아래와 같다.

digit key로 direct 선택시 기존의 TV와 동일하게 채널을  
잡는게 여러 방송이 있을 경우 가장 높은 번호의 방송은 화면에  
보여 주고 OS를 아래로 내려 표현하므로써 정해진  
방송이 현재 채널에 있는지를 보여 준다.

32



현재 채널에 4개의 방송이 있음을 의미한다.  
(32)

이 화면에서 ch up/down key로 다른 방송을 시청  
할수 있다.


(작성요령)

- 1) 발명(고안)의 구성을 위에서  
우, 위에서 아래, 또는 유자  
연관순서에 따라 순차적으로  
나열 설명함.
- 2) 발명(고안)의 부분을 구성하  
는 종래 기술부분과 그 부분  
이 종래 기술임을 명시함.

## CERTIFICATE OF TRANSLATION

As a below named translator, I hereby declare that my residence and citizenship are as stated below next to my name and I hereby certify that I am conversant with both the English and Korean languages and the document enclosed herewith is a true English translation of the Invention Disclosure with respect to the Korean patent application No. 1997-29839 filed on 30 June 1997.

**NAME OF THE TRANSLATOR :** KIM, Sook-Hee

**SIGNATURE :** 

**Date :** 22 July 2003

**RESIDENCE :** MIIWA BLDG., 110-2, MYONGRYUN-DONG 4-GA, CHONGRO-GU, SEOUL 110-524, KOREA

**CITIZENSHIP :** REPUBLIC OF KOREA

## INVENTION DISCLOSURE

- DEPARTMENT: Corporate R & D Center  
(Signal Processing Lab)
- DATE OF REPORTING: 16 May 1997
- INVENTOR'S NAME: Sik-Won JEONG
- IDENTIFICATION NO.: 731127-1815419
- EMPLOYEE NO.: 91041451
- INVENTOR'S ADDRESS: 416, Maetan 3-dong, Paltal-gu, Suwon-shi, Kyonggi-do,  
Republic of Korea
- TITLE OF THE INVENTION: Method for displaying the adjacent channels during  
channel up or down
- KEY WORDS: NTSC, HD, SD, UP, DOWN
- EVALUATION RESULT OF THE INVENTION: Class of invention: A B (C)  
\* A class (of 20 points or more), B class (of 16 points or more),  
C class (of 10 points or more), D class (below 10 points)
- KOREAN PATENT APPLICATION: Patent Application (O) Utility Model ( )
- FOREIGN PATENT APPLICATION: Yes ( ) No ( )
- REQUEST FOR SUBSTANTIVE EXAMINATION: Yes (O) No ( )
- AGENT: K.J.LEE PATENT & TRADEMARK OFFICE

## **DRAFT OF SPECIFICATION ASSOCIATED WITH EMPLOYEE'S INVENTION**

### **1. TITLE OF THE INVENTION**

5

Method for displaying the adjacent channels during channel up or down

### **2. PROBLEM OF PRIOR ART**

10

An NTSC broadcasting system has a few channels, so that channel up or down is easy. On the other hand, a HDTV has a plurality of HD channels and the channels change on occasion, which makes difficult for the user to find and remember all the channels.

### **4. DETAILED DESCRIPTION OF INVENTION**

15

A plurality of channels are allocated to a digital TV (HDTV). The channels are not fixed and the channel information may be changed on occasion. Therefore, by displaying the adjacent channels on the screen during channel up or down the user can be aware of the number of the current HD channels and can know how often up/down should be done to find the desired channel.

20

When selecting channels, the channel number in accordance with the existing frequency is displayed in OSD, together with SD and HD digital programs which are on broadcast on this channel.



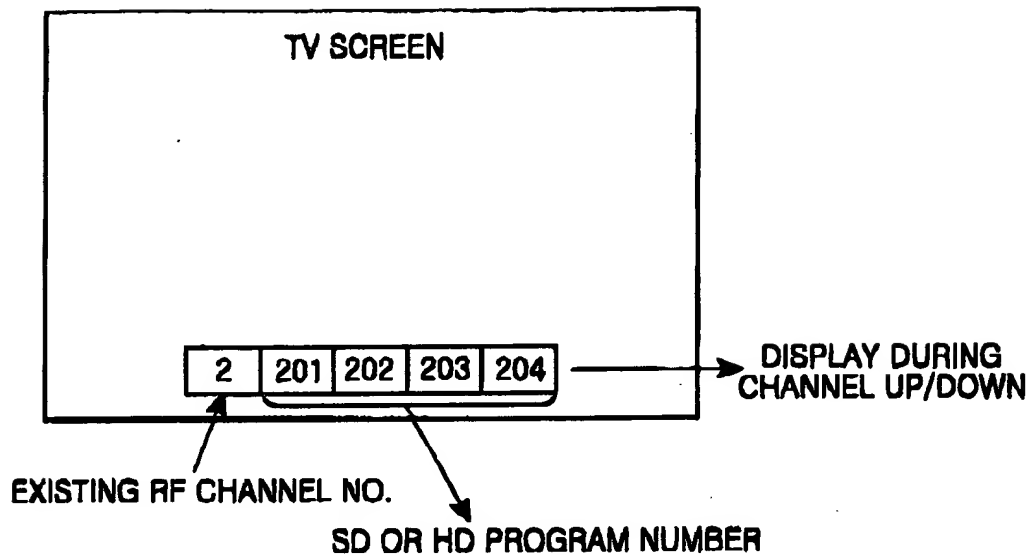
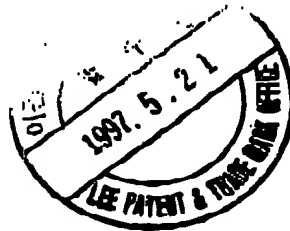


FIG. 1

원 구 심	담당	과장	부장	직무발명신고서	관리 부서	특허담당	과장	부장	실장			
	/	/	/			/	/	/	/	/		
발 명 자 기 재 단	부서	(TEL. )				작성일자	199    년    월    일					
	대표발명자	성명 (한글)	원 (한문)				발명 의 청					
		주민등록번호		사원번호		금호						
		주소										
	공동발명자	성명	1. (한글)		원 (한문)		Jeong-sik-won 鄭植元					
			2. (한글)		원 (한문)							
		주민등록번호	1. ....	사원번호	1. ....	국호					1. ....	
			2. ....		2. ....	호					2. ....	
		주소	1. ....									
			2. ....									
발명자명												

015



지출확인	담당	과장
	/	/
지출번호		
지출부서	사업부 특허담당자	
수신처	특허법률사무소	
용도	특허출원용	
출원완료 날기	199    년    월    일	

발 명 자 기 재 단	국내출원	( ) 특허 ( ) 실용	출원시 심사청구여부	1. 유 2. 무(시기: 출원후 1년, 2년, 3년, 포기)	
	예외출원	1. 필요(시기: ) 2. 불필요		발 명 자 의 견	
	출원국가				
	출원사유				
자 신 사 실 기 재 단	의견				
	지시사항				
					접수사형

연수원		담당	과장	부장	직무발명신고서				관리부서	특허담당	과장	부장	실감
					특허법 제40조 제1항 규정에 의거한 당사 직무발명 보상규정 제4조 및 제3장 각조에 의거하여 자기 발명 또는 고안에 대하여 특허를 받을 수 있는 권리를 양도합니다.								
발명자 기재란	부서	기술개발팀 (TEL 3399)			작성일자		1997년 5월 16일						
	대표발명자	성명 (한글)	정석원			성명 (한문)	鄭石元						
		주민등록번호	231127-18841			사원번호	30000000						
		주소	서울특별시 강남구 테헤란로 416번										
	공동발명자	성명	1. (한글) 정석원 2. (한글) Jeong Sic Wan 3. (한문) 정석원			발명명칭	정보 Up/down A 관련 정보 Display Message						
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					과제코드								
					개발기간								
					개발단계	아이디어 기획 E V T M V T 한후 개발과제 PROTO DVT 기타( )							
					적용시점	현재 : 향후 :							
					키워드 (한글)	NTEC, HD, SD, Up, Down							
부서별 평가란	평가항목	평가내용	평가기준				점수						
			4점	3점	2점	1점							
			신규기술개발	고난이도개발기술	비특기기술	저난이도개발기술							
			매우 큼	조금 큼	보통	비							
			실시성	단기간내 실시	실시연구	계획없음							
	평가항목	평가내용	평가기준				점수						
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			매우 큼	조금 큼	보통	비							
			실시성	단기간내 실시	실시연구	계획없음							
			매우 큼	조금 큼	보통	비							
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평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점수					
평가항목		평가내용		평가기준				점					

## 2. 종래기술의 설명

## [구성설명]

(작성요령)

전항의 종래 기술의 설명단에 서술한 종래 기술장치의 구성을 도면과 연관하여 간접 명료하게 알 수 설명함.

## [종속설명]

(작성요령)

종래 기술의 장치가 어떻게 동작하는가를 종속순서로 막다 순차하게 설명함.  
예를들면, 동적인 상태, 동적시, 동작후, 원위치 과정순서로 기재함.

## 3. 종래기술의 문제점

1. 상기 종래기술의 문제점을 지적하고 는 발명(고안)에서 개선하려는 내용(발명의 배경 및 동기 등) 및 개선효과를 설명함.

현재 NTSC 방송과 저속 채널수가 적어 이기 때문에 채널 UP/DOWN이  
간단히 해결되지만 최근 HDTV는 채널 SD에 HD 채널이  
있거나 많은 그런 수직 채널이 있음과  
같이 때문에 USER가 채널을 찾을때 너무나 힘들고  
채널수도 상당히 많기 때문에 위와이 USER가 기억할수 없다

## 4. 발명(고안)의 상세한 설명

[발명(고안)의 구성] + 발명(고안)의 구성을 선택된 약표한 실시예의 도면과 연관하여 해당 기술분야의 통상의 지식을 가진자가 쉽게 이해할 수 있도록 설명함.

Digital TV (HDTV)에는 많은 채널들이 할당되어져 있다.  
이들 채널들은 방송 채널로써 수신되고 시청 가능할 수 있다.  
이렇게 채널 정보가 변화함으로써 현재 채널 UP/Down 시  
전경 채널들을 화면에 Display 제공으로 해서 현재 HD 채널이  
몇개가 있는지 USER가 알수 있고, 몇번을 UP/Down  
해서 자기가 원하는 채널이 수신 있는지 알수 있다.

Ch을 변경할 때 기존 수신되어 있던 channel \* 16 를  
Display (OSD로) 하고 이후 함께 이 channel에  
방송하고 있는 SD 및 HD의 Digital Program은  
같이 OSD로 Display 한다.

(작성요령)

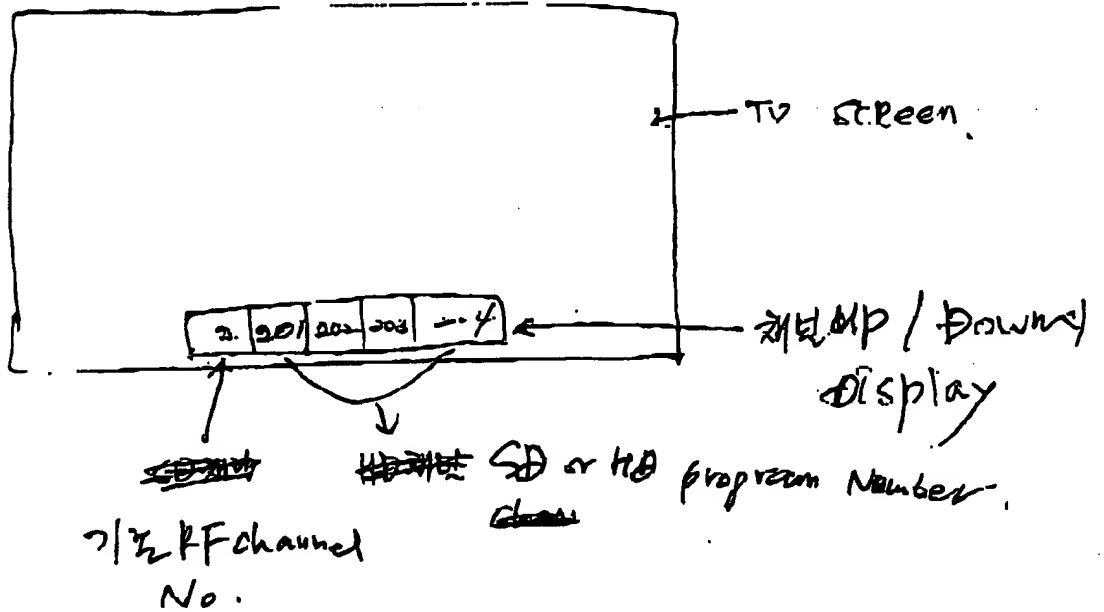
- 1) 발명(고안)의 구성을 위에서  
우, 위에서 아래, 또는 동쪽  
변환순서에 따라 순차적으로  
나열 설명함.
- 2) 발명(고안)의 부분을 구성하  
는 종래 기술부분은 그 부분  
이 종래 기술임을 명시함.

## 6. 도면

+ 도면에 대한 간단한 설명을 도면아래에 기재할 것.

예) 제 1 도는 종래 ...각지의 사시도 제 2 도는 제 1 도의 A-A 단면도


+ 제 3 자가 보아 발명(고안)을 쉽게 이해할 수 있도록 가능한 한 사시도, 부분절개 사시도(필요시 정면도, 측면도 추가)를 사용할 것(설계도면 사용배제).



## CERTIFICATE OF TRANSLATION

As a below named translator, I hereby declare that my residence and citizenship are as stated below next to my name and I hereby certify that I am conversant with both the English and Korean languages and the document enclosed herewith is a true English translation of the Invention Disclosure with respect to the Korean patent application No. 1997-32239 filed on 11 July 1997.

**NAME OF THE TRANSLATOR : KIM, Sook-Hee**

**SIGNATURE :** 

**Date : 22 July 2003**

**RESIDENCE : MIHWA BLDG., 110-2, MYONGRYUN-DONG 4-GA, CHONGRO-GU, SEOUL 110-524, KOREA**

**CITIZENSHIP : REPUBLIC OF KOREA**

## INVENTION DISCLOSURE

- DEPARTMENT: Corporate R & D Center  
(Signal Processing Lab)
- DATE OF REPORTING: 16 May 1997
- INVENTOR'S NAME: Phil-Tae KIM
- IDENTIFICATION NO.: 670909-1002218
- EMPLOYEE NO.: 96055286
- INVENTOR'S ADDRESS: Migeun APT. Chungjongno-dong, Sodaemun-gu, Seoul,  
Republic of Korea
- TITLE OF THE INVENTION: Using a scroll bar when selecting a channel
- SUBJECT MATTER OF THE INVENTION: Method for easily selecting channel when  
using a pointing device
- EVALUATION RESULT OF THE INVENTION: Class of invention: A B (C)  
\* A class (of 20 points or more), B class (of 16 points or more),  
C class (of 10 points or more), D class (below 10 points)
- KOREAN PATENT APPLICATION: Patent Application (O) Utility Model ( )
- FOREIGN PATENT APPLICATION: Yes ( ) No ( )
- REQUEST FOR SUBSTANTIVE EXAMINATION: Yes (O) No ( )
- AGENT: K.J.LEE PATENT & TRADEMARK OFFICE



## **DRAFT OF SPECIFICATION ASSOCIATED WITH EMPLOYEE'S INVENTION**

### **1. TITLE OF THE INVENTION**

5 Using a scroll bar when selecting a channel

### **2. BACKGROUND OF THE INVENTION**

10 Using a pointing device decreases the number of direct keys and makes possible to select a desired channel faster and conveniently according to the television's location.

### **4. DETAILED DESCRIPTION OF INVENTION**

15 When selecting a channel using a pointing device, the right next channel number can be easily known. However, in case that the current channel is "10", it is very inconvenient to move by one channel unit to the channel "900" by using a pointing device or a direct key. To solve this problem, certain area of the screen may be segmented at a regular rate. Thereafter, from the channel "0" to the last channel number are displayed in the fixed area of the screen.

20 That is, the channel number "0" is allotted to the first area, the median number is allotted to the middle of the fixed area and the last number is allotted to the end. If the user clicks one area, the corresponding channel number is selected. Moreover, the neighboring numbers are also displayed, so that it is easy to select them.

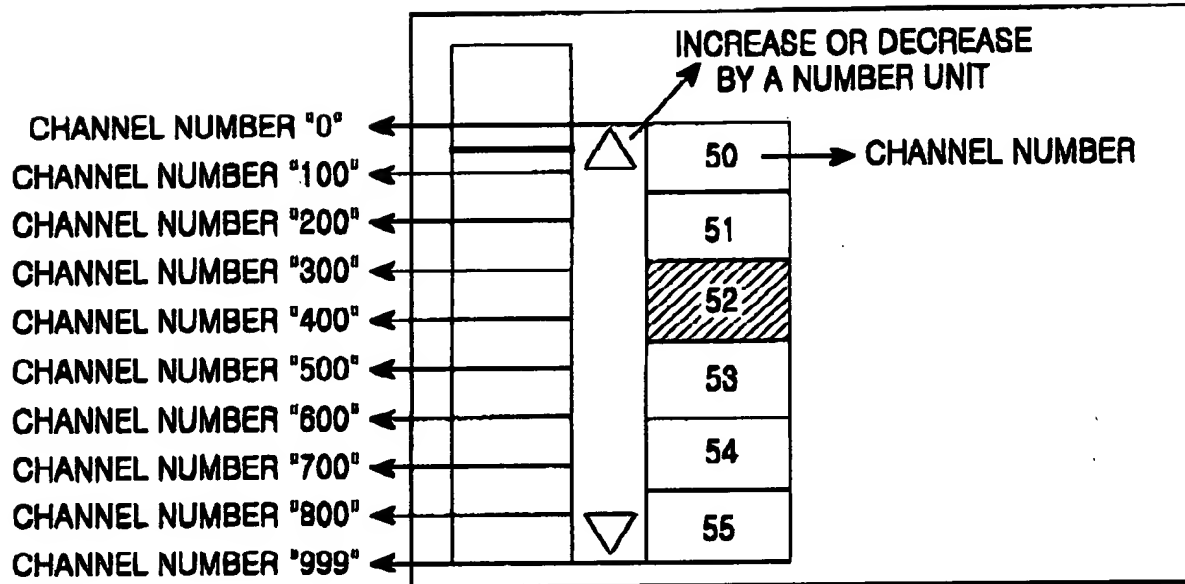


FIG.1

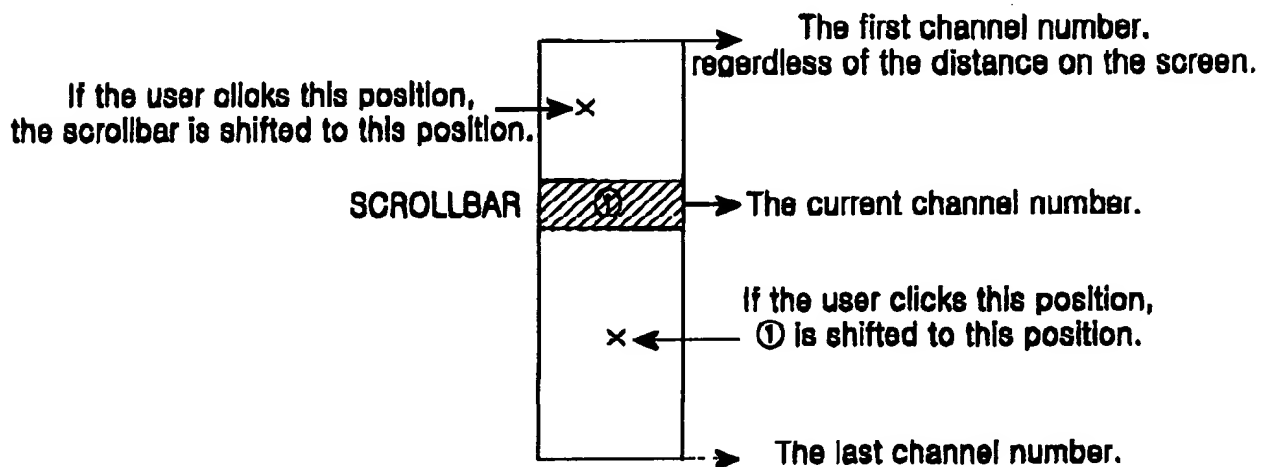


FIG.2

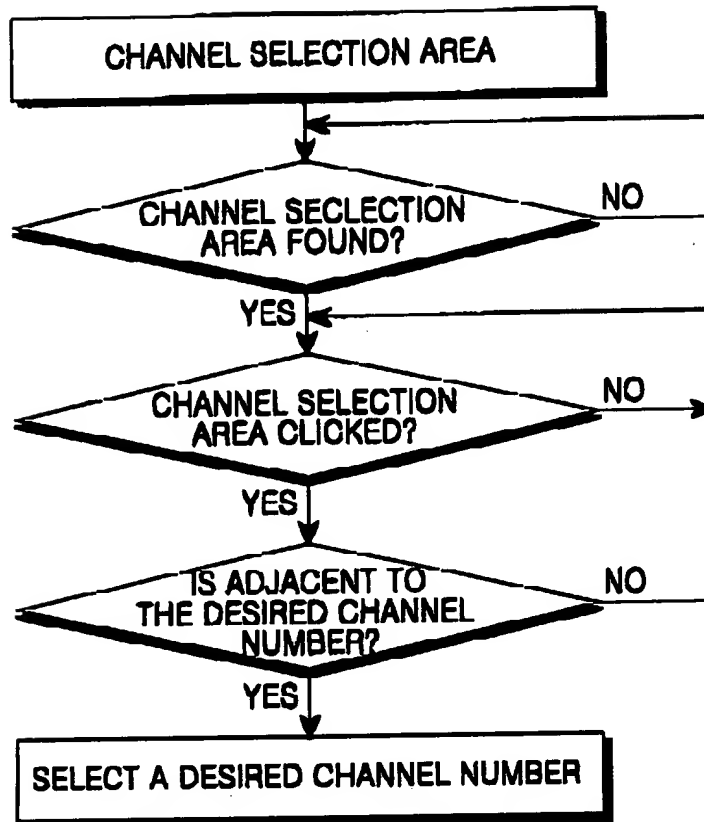


FIG.3



인구		담당	과장	부장	직무발명신고서				과	과장	부장	실장
<p>특허법 제40조 제1항 규정에 의거한 당사 직무발명 보상규정 제4조 및 제3항 각조에 의거하여 하기 발명 또는 고안에 대하여 특허권을 받을 수 있는 권리를 양도합니다.</p>					<p>특허담당</p>		<p>과장</p>		<p>부장</p>		<p>실장</p>	
<p>주식회사 <b>신한전기공업</b> (TEL 200-4927)</p>					<p>자성인자</p>		<p>1997년 5월 18일</p>					
<p>발명인 (한국) <b>김필태</b> (한국) <b>김보영</b></p>					<p>발명명칭</p>		<p>channel... filter... small bar... 디플렉터</p>					
<p>주민등록번호 <b>9209200000</b> 사원번호 <b>9205200</b> 급호 <b>5</b></p>					<p>숙박기숙코드</p>							
<p>주소 <b>서울시 관악구 신림3가길 11-1</b></p>					<p>분류코드</p>							
<p>성명 1. (한국) <b>Kim, Phil-tae</b> (한국)</p>					<p>과세명</p>							
<p>2. (한국) (한국)</p>					<p>과제코드</p>							
<p>주민등록번호 1. .... 시원 1. .... 급 1. ....</p>					<p>개원기리</p>							
<p>2. .... 번호 2. .... 호 2. ....</p>					<p>개발단계</p>		<p>아이디어 ... 향후 개발과제 기 회 ... PROTO E V T ... DVT M V T ... 기타 (TV)</p>					
<p>주소 1. ....</p>					<p>적용제품</p>		<p>현재: ... 향후: <b>HDTV</b></p>					
<p>2. ....</p>					<p>키워드 (한글)</p>							
<p>발명명칭 <b>Printing Device</b> 사원명 <b>channel</b> 선택은 간편하게 하기 위한 방법임.</p>												
평가항목		평가내용		평가기준				점수				
				4점	3점	2점	1점					
특허성	발명사상 (발명성)	• 발명의 구성 또는 문제 해결수단이 종래기술과 비교하여 어느정도 신규 구성인가?		신규 기본발명	고난이도 계량기술	보통기술	저난이도 계량기술					
	발명비의 급효의	• 발명의 신규 구성에서 얻어지는 기대 효과(특성 향상, 제작성, COST 등)는 어느 정도인가?		매우 큰	조금 큰	보통	미미					
	실용화여부	• 실시예 따른 주변여건이 조성되었는가? • 기술적 난이도 해결에는 문제가 없는가?		실시 가능	단기간 내 실시 가능	실시 연구	제외 없음					
	타지용변위	• 발명용 제품 또는 기술에 적용할 수 있는 범위가 넓는가?		매우 넓은	넓음	보통	좁음					
실험성	실험결과	• 동원타사가 발명을 사용 및 실시했을 경우 그 사실 여부를 확인하기 용이한가?		매우 용이	유리	보통	불편					
	타사 실시 가능성	• 동원타사가 발명을 사용, 실시할 가능성은 어느 정도인가?		매우 큼	큼	보통	적음					
평가결과		발명등급 <b>A B C</b> (A급: 20점 이상, B급: 16점 이상, C급: 10점 이상, D급: 10점 이하)		총점								
부서장 의견		(발명에 대한 종합의견)										
국내출원		( ) 특허 ( ) 실용		출원시점사청구여부		2. 무(시기: 출원후 1년, 2년, 3년, 포기)						
해외출원		1. 필요(시기: ) 2. 불필요		진행사항		이전 LIDEA... ...						
출원국가												
출원사유												
의견 및 지시사항		점수사명 <b>AC9705-25</b>										

## 직무발명 (고안) 명세서

### 1. 발명 (고안) 의 명칭

+ 발명 (고안) 내용을 적절히 표현할 수 있는 명칭을 간단명료하게 기재함. + 전문용어, 약자는 가당히 피함.

예) 전자원자의 도어로크장치,  
터플레크 융합기기의 연속동  
작에 의해

### 2. 발명 (고안) 의 배경

[산업상 이용분야]

+ 200자 내외로 발명 (고안) 의 적용분야를 간결명료하게 압축하여 설명함.

Painting Device를 사용하면 Paint key가 매우 적어진 텔레비전  
의 기저에 하나 Channel을 선택할 때 편리하게 원하는 channel은  
빠르게 선택할 수 있도록 하기 위한 것임

예) 본 발명 (고안) 은 ...하는 영상  
재생장치 (넓은 Category) 에  
한한 것으로 특히 ... (발명  
(고안) 의 특정 기능) 할 수  
있도록 한 (...에 적합함) 회  
로설로 특효피로 (좁은 Ca-  
tegory) 에 관한 것이다.

### [종래 기술의 설명]

+ 가장 최근에 공지된 발명 (고안) 과 관련된 기술을 요약 설명함.

#### 1. 기술참거 (해당부분만 선제하여 기재)

##### (1) 유사특허 또는 출원

+ 해당특허의 출원번호 (또는 등록번호), 명칭, 출원  
인 등을 기재하고 첨부함.

##### (2) 매개문헌 또는 제품

+ 문헌명, 해당Page, 발표년월, 발표자 등을 기재하고  
첨부함. 1 제품모델명, 제조회사, 제조년월일 기재함.

##### (3) 발명 (고안) 과 관련된 본 발명자의 선출원

+ 선출원 번호, 출원일 (만드시 기재함), 명칭을  
기재함.

예) 종래, ...에 관한 본 발명 (고  
안) 과 관련된 ...기술은 ...에  
의해 출원된 특허출원 제90-  
1234호 (명칭, 출원일) 에  
기재되어 있음.

예) ...기술과 관련된 종래 기술  
은 ...에 의해 발표된 IEEE  
1992년 10월, P12, 5쪽에  
사술됨.

예) ...기술과 관련된 종래 기술은  
시장에서 구입할 수 있는  
1992년 5월, 소니(SA) 제조  
모델 P2235에 개시되어  
있음.

예) ...에 관한 기술은 본 발명 (고  
안) 자의 특허출원 제 92-  
4321호 (명칭, 출원일) 에 서  
술되어 있음.

## 2. 중대기술의 설명

## [구성설명]

(작성요령)

간접의 중대 기술의 출시안에 서  
유한 중대 기술장치의 구성을 도  
면과 연표와의 간접 명목하게 안  
속설명함.

## [동작설명]

(작성요령)

중대 기술의 장치가 어떻게 동작  
하는가를 동작순서에 따라 간략  
하게 설명함.  
예를들면, 동작전 상태, 동작시,  
종료후, 연이치 과정순으로 기재  
함.

## 3. 중대기술의 문제점

\* 상기 중대기술의 문제점을 지적하고 본 발명(고안)에서 개선하려는  
내용(발명의 배경 및 동기 등) 및 개선효과를 설명함.

## [발명(고안)의 목적]

예) 본 발명(고안)의 목적은 ...  
(기동)하기 위한 ... (본 발명  
(고안)의 장치)을 제공하  
는 것이다.

## 3. 특허(실용신안 등록) 청구범위

(청구범위) + 복수권을 얻고 싶은 특정사항을 기재함. 즉, 발명(고안)을 달성하는데 필요한 최  
소한의 구성을 상위개념의 기능설명과 병행하여 간결히 기재함(독립항).  
+ 독립항 또는 타종속항에서 인용된 구성을 구체화 내지 한정함(종속항).

예) 독립항  
○○○ 기능을 하는 A와,  
××× 기능을 하는 B로 구성된  
○장치(회로).

A단계와 B단계와 C단계로  
이루어지는 ... 제어(제조) 방법.

예) 종속항  
제1항에 있어서 등번호, 권공부  
(수단)는 ... 하는 ...와, ...하는  
로 구성된 ○ 장치



## 4. 발명(고안)의 상세한 설명

[발명(고안)의 구성] + 발명(고안)의 구성을 선택된 양호한 실시예의 도면과 관련하여 해당 기술분야의 통상의 지식을 가진자가 쉽게 이해할 수 있도록 설명함.

Printing Review A에서 channel은 선택한 뒤 바로 앞에 있는 번호나  
뒤에 있는 번호는 함께 각 수 있으나 멀리 떨어진 번호 즉 처리된  
10번인데 500번에 있는 channel은 번호가 끝의 printing  
Review로 이동하거나 Mark key를 이용하여 한칸씩 자기에  
수정된 후 다시 500번의 하측 위치 화면의 왼쪽지역은  
자기로 표시하여 왼쪽 번호로 바꾸고 ~~20~~ 그렇게 한 다음에  
0에서 9번까지의 ~~20~~ 화면에서 점선 지역에 맞춰서 나와  
된다

즉, 인쇄부의 각 부분은 0번부터는 자수로는 전체 번호의 전체  
번호로 끝에서 끝번호로 비분하여 1지역의 한 자수는 printing  
Review로 Click 하면 그 번호가 선택되도록 한다. 또한 그 번호  
의 번호는 0만 함께 보여주어서 그 번호로 선택한 수 있도록 한다

(작성요령)

- 1) 발명(고안)의 구성을 위에서  
유, 위에서 아래, 또는 좌측  
단순순서에 따라 순차적으로  
나열 설명함.
- 2) 발명(고안)의 부분을 구성하  
는 종래 기술부분은 그 부분  
이 종래 기술을 명시함.

[발명(고안)의 동작설명] + 상기 압요한 실시예의 동작은 동작상태에 따라 상세히 설명함.  
순서와 바꾸거나 빠뜨리지 않도록 주의하며, 동작전 상태, 동작시,  
동작후, 원위치 과정 등으로 분리하여 기재함.

[타설시세의 설명] + 발명(고안)을 구체화 할 수 있는 가능한 모든 실시예(발명(고안)과 동일한 원리나 독립타사가 달리 구성할 만한 기술)을 서술함.

예) 제5도에 도시한 바와 같이,  
...는 ...로도 구성될 수 있다  
(이하 동작설명). 이 실시예  
에 의하여 ...의 효과가 있다

[발명(고안)의 효과] + 종래 기술에서 해결할 수 없었던 기술적 장점(새로운 성능, 기능, 경제성)을 구체적인 실험결과를 기록한 효과(Data, 도표, 뉴 플롯)를 예시하여 종합적으로 설명함.

#### 5. 도면의 주요부분에 대한 부호의 설명

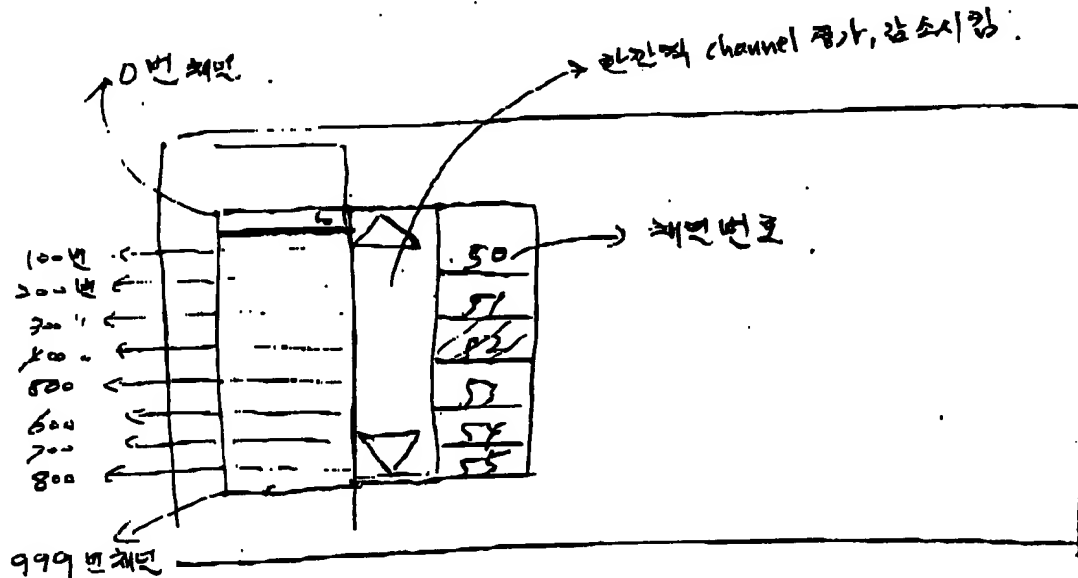
예) 1 : 부호기어  
2 : 구동모터

## B. 도면

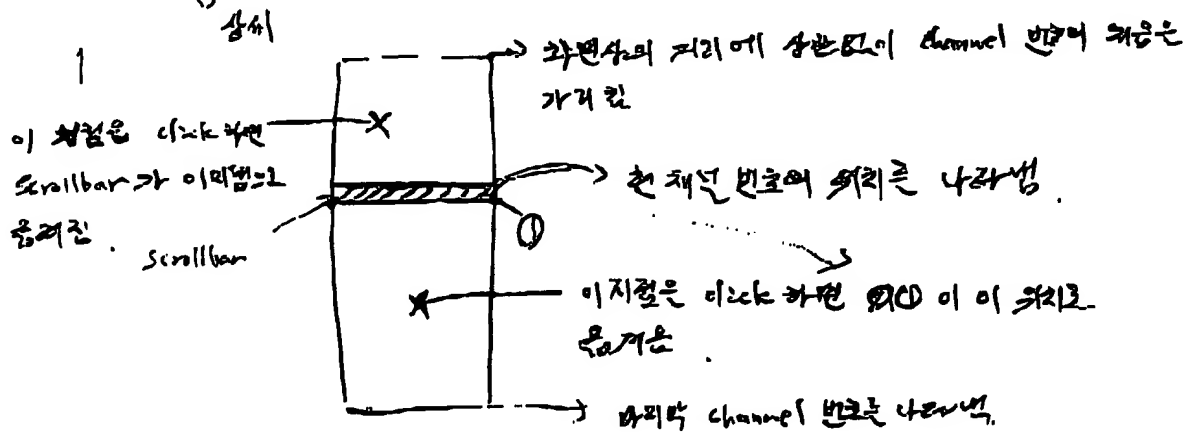
+도면에 대한 간단한 설명을 도면아래에 기재할 것.

예) 제1도는 종래 ...장치의 사시도, 제2도는 제1도의 A-A 단면도

+제3자가 보아 발명(고안)을 쉽게 이해할 수 있도록 가능한 한 사시도, 부분절개 사시도(필요시 정면도, 측면도 추가)를 사용할 것(설계도면 사용매제).



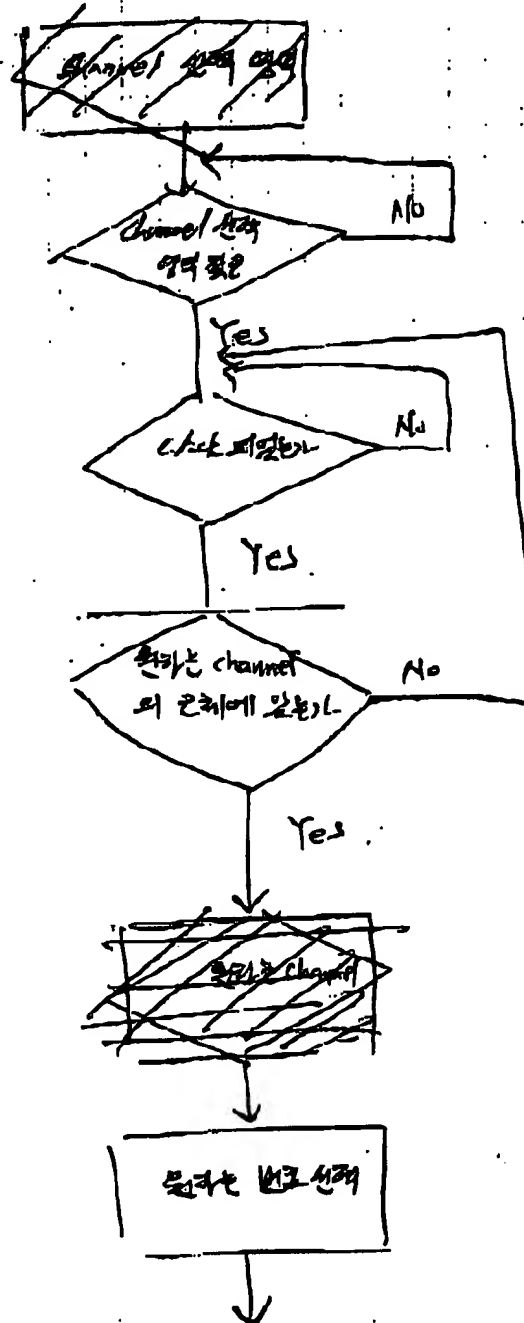
(도면 1)



(도면 2)

## 6. 도면

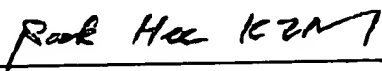
- 도면에 대한 간단한 설명을 도면아래에 기재할 것.  
예) 제1도는 종래 ...장치의 사시도, 제2도는 제1도의 A-A 단면도
- + 제3자가 보아 발명(고안)을 쉽게 이해할 수 있도록 가능한 한 사시도, 부분절개 사시도(필요시 정면도, 측면도 추가)를 사용할 것(설계도면 사용예제).



## CERTIFICATE OF TRANSLATION

As a below named translator, I hereby declare that my residence and citizenship are as stated below next to my name and I hereby certify that I am conversant with both the English and Korean languages and the document enclosed herewith is a true English translation of the Priority Document with respect to the Korean patent application No. 1997-29836 filed on 30 June 1997.

**NAME OF THE TRANSLATOR :** KIM, Suok-Hee

**SIGNATURE :** 

**Date :** 22 July, 2003

**RESIDENCE :** MIHWA BLDG., 110-2, MYONGRYUN-DONG 4-GA, CHONGRO-GU, SEOUL 110-524, KOREA

**CITIZENSHIP :** REPUBLIC OF KOREA

**[ABSTRACT OF THE DISCLOSURE]****[ABSTRACT]**

Disclosed is a method for displaying a selected channel in a digital television receiver. The channel displaying method enables a user to easily confirm the number of programs being broadcasted on a selected RF channel and easily select a desired program. When two or more programs are being received on a selected RF channel, one of the programs is selected and outputted as a program-being-watched. At the same time, the program number of the program-being-watched and sub-channel symbols corresponding to the program numbers of the remaining programs are displayed in numeric order on the digital TV receiver. A user can select another program by inputting a channel up/down key for selecting a program number displayed in the up or down direction from the number of the program-being-watched.

**15 [REPRESENTATIVE FIGURE]**

FIGURE 2

**[INDEX]**

**[SPECIFICATION]****[TITLE OF THE INVENTION]**

METHOD FOR DISPLAYING CHANNELS IN DIGITAL  
TELEVISION RECEIVER

5

**[BRIEF DESCRIPTION OF THE DRAWINGS]**

FIG. 1 is a block diagram of a HDTV receiver to which the present invention is applicable;

FIG. 2 is a flow chart showing a process performed by a microprocessor  
10 of FIG. 1 according to a preferred embodiment of the present invention; and

FIG. 3 shows an example of channel display according to the preferred embodiment of the present invention.

**[DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT]**15 **[OBJECT OF THE INVENTION]****[RELATED FIELD AND PRIOR ART OF THE INVENTION]**

The present invention relates generally to a digital television ("TV") receiver, and more particularly to a method for displaying a selected channel on a display of a digital TV receiver.

20 In analog TV broadcasting, such as NTSC (National Television System Committee) system based broadcasting, only a single program can be broadcasted on a fixed frequency bandwidth of one RF (radio frequency) channel.

By contrast, next-generation digital TV broadcasting, such as HDTV (High Definition TeleVision) broadcasting, can deliver many more RF channels



than the analog TV broadcasting. Also, digital TV broadcasting can flexibly assign appropriate bit rates to provided services, if required. In other words, a plurality of programs can be broadcasted within a limited transmission bandwidth of one RF channel. Thus, it is possible to broadcast SD (standard  
5 definition) programs, such as general analog TV broadcasting programs, on multiple channels in a particular time zone and HD programs on a single channel in another time zone. For example, according to the US ATSC (United States Advanced Television System Committee) standard, one RF channel equivalent to one analog channel is recommended to be subdivided into up to six sub-channels  
10 so that a digital TV can broadcast at least one HD program or up to 6 SD programs at the same time.

Since digital TV broadcasting transmits a plurality of programs on a single RF channel, it is required to display program guide information on a display of a digital TV receiver so that a user can select one of the plurality of  
15 programs. To this end, the ATSC standard defines an electronic program guide (EPG) to provide a method of selecting a program. That is, a TV station transmits EPG information of each RF channel. A digital TV receiver stores the received EPG information and displays it when the user wishes to see it.

From the EPG information, the user can confirm the number of programs  
20 being broadcasted on sub-channels of an RF channel. However, the user should separately select a display of the EPG information. In addition, it is troublesome to confirm the number of programs being broadcasted on a selected RF channel and select a desired program in digital broadcasting, as compared to the existing analog TV broadcasting. Since a TV station may deliver both

analog broadcasting and digital broadcasting, users may be further confused when selecting a channel and a program.

#### **[SUBSTANTIAL MATTER OF THE INVENTION]**

5 As described above, in digital TV broadcasting, it is required for a user to easily confirm the number of programs being broadcasted on a selected RF channel and easily select a desired program.

It is, therefore, a first object of the present invention to provide a method for displaying channels in a digital TV receiver to enable a user to easily confirm  
10 the number of programs being broadcasted on a selected RF channel.

It is a second object of the present invention to provide a method for displaying channels in a digital TV receiver to enable a user to easily select any program being broadcasted on a selected RF channel.

#### **15 [CONSTRUCTION AND OPERATION OF THE INVENTION]**

In order to accomplish the first object, the present invention selects and outputs one program as a program-being-watched, when two or more programs are running on a selected RF channel. Also, the present invention displays the program number of the program-being-watched, together with sub-channel  
20 symbols corresponding to the program numbers of the remaining programs, in numerical order on a display of a digital TV receiver. In order to accomplish the second object, the present invention changes the program-being-watched to a program corresponding to the program number selected using a channel up/down key, among the program numbers displayed in the up or down direction from the

program number of the program-being-watched.

Hereinafter, a preferred embodiment of the present invention will be described with reference to the accompanying drawings. Although certain processes or pictures are specifically exemplified in the following description of  
5 the present invention and in the drawings, it will be obvious to those skilled in the art that such examples are merely to improve understanding of the present invention and that the present invention is not limited to such specific examples. Also, in the following description of the present invention, a detailed description of known functions and configurations incorporated herein will be omitted when  
10 it may make the subject matter of the present invention rather unclear.

FIG. 1 is a block diagram of a HDTV receiver adopting the MPEG (Moving Picture Expert Group) standard, to which the present invention is applicable. Referring to FIG. 1, a tuner 102 tunes an RF channel from broadcasting signals received through an antenna 100 under the control of a  
15 microprocessor 124, and outputs an intermediate frequency (IF) signal. An IF module 104 converts the IF signal into a baseband signal and outputs the baseband signal to a channel decoder 106. The channel decoder 106 decodes the baseband signal received from the IF module 104 and reproduces a data bit stream. The reproduced data bit stream is separated into audio data, video data  
20 and additional data by a TS (transport stream) decoder 108.

The audio data is applied to an audio decoder 110 to be decoded according to the MPEG standard or the Dolby AC-3 standard. An audio processing and outputting section 112 processes the decoded audio data and outputs it to a speaker 114. The video data is applied to a video decoder 116 to

he decoded according to the MPEG standard. The decoded video data is applied to an OSG (On Screen Graphic) mixer 118 to be mixed with OSG data under the control of the microprocessor 124. A video processing and outputting section 120 processes the mixed data and outputs it to a display through a picture tube 122. The OSG data is required for the microprocessor 124 to display any information in the form of graphic or text on the display.

A keypad 130 and an IR (infrared) receiver 134 are connected to the microprocessor 124, which is a control section of the HDTV receiver, through a user interface 128. The microprocessor 124 operates according to a command inputted from an IR remote 132 through the keypad 130 or the IR receiver 134, based on a program stored in a memory 126. The IR remote 132 can be a wireless mouse, such as an air mouse, or a remote controller (REMOCON). A command applied from the IR remote 132 is received as an IR signal by the IR receiver 134 and transmitted to the microprocessor 124 through the user interface 128. Also, additional data is applied to the microprocessor 124 from the TS decoder 108. The additional data includes EPG information as described above or PSI (program specific information) as defined in the MPEG standard.

The memory 126 comprises a ROM (read only memory) for storing a program of the microprocessor 124, a RAM (random access memory) for temporarily storing data according to the implementation of the program of the microprocessor 124, and an EEPROM (electrically erasable and programmable ROM) for storing various reference data.

The tuner 102, IF module 104, channel decoder 106, TS decoder 108, audio decoder 110, audio processing and outputting section 112, video decoder

116, OSG mixer 118, video processing and outputting section 120 and memory 126 as explained above are connected to each another via a bus 136 connected to the microprocessor 124.

FIG. 2 is a flow chart showing a process according to the preferred embodiment of the present invention which is applicable to a digital TV receiver such as a HDTV receiver as explained above. The process as depicted in the flow chart is programmed in the ROM of the memory 126 to be implemented by the microprocessor 124.

The process for displaying channels according to the preferred embodiment of the present invention will be explained in more detail with reference to FIGs. 1 and 2. When a user inputs a key for designating the channel number of a channel desired to be selected using the keypad 130 or IR remote 132 of FIG. 1 (step 200), the microprocessor 124 controls the tuner 102 to select an RF channel corresponding to the inputted number in response to the key input (step 202). Accordingly, an IF signal of the RF channel selected by the user is outputted from the tuner 102 and converted into a baseband signal in the IF module 104. The converted signal is then channel-decoded by the channel decoder 106, thereby reproducing a data bit stream. The reproduced data bit stream is divided into audio data, video data and additional data by the TS decoder 108.

At step 204, the microprocessor 124 confirms, from EPG information or PSI included in the additional data applied to the TS decoder 108, whether the number of programs running on the currently selected RF channel is two or more. If only one program is running, its audio and video data will be outputted from

the TS decoder 108. Accordingly, the sound and image of that program will be outputted through the speaker 114 and the picture tube 122, respectively.

If it is determined at step 204 that two or more programs are running on the selected RF channel, the microprocessor 124 will select one of those 5 programs (step 206). For example, the microprocessor 124 will control the TS decoder 108 to select a program with the lowest program number as the program-being-watched. The audio and video data of the selected program will then be outputted from the TS decoder 108. Accordingly, the sound and image of the viewing program will be outputted through the speaker 114 and the picture tube 10 122, respectively.

At step 208, the microprocessor 124 displays the program number of the program-being-watched and the sub-channel symbols on the display, using the OSG mixer 118. The program number of the program-being-watched is a unique number assigned to a program selected as the program-being-watched, 15 among the programs running on the currently selected RF channel, whereas the sub-channel symbols represent the program numbers of the remaining programs. The microprocessor 124 displays the program number of the program-being-watched and sub-channel symbols corresponding respectively to the program numbers of the remaining programs in numeric order on the display, together 20 with the selected RF channel number.

FIG. 3 shows an example of how to display the program number of the program-being-watched and the sub-channel symbols according to the preferred embodiment of the present invention. Referring to FIG. 3, RF channel "32" is selected. Four programs with unique program numbers, including the lowest

program number "22" and the second lowest number "40", are broadcasted on the RF channel "32". Two symbols ▲ and ▼ are used as examples of sub-channel symbols. These symbols indicate program numbers higher or lower than the number of the program-being-watched. To be specific, the sub-channel  
5 symbol ▲ indicates a program number following the number of the program-being-watched, while the symbol ▼ indicates a program number preceding the number of the program-being-watched.

Referring to FIG. 3(a), a program with the lowest number "22", among the four programs running on RF channel "32", is selected as the program-being-  
10 watched. FIG. 3(a) shows an example of channel display where RF channel number "32", three sub-channel symbols ▲ and lowest program number "22" are displayed longitudinally on the left upper part of the display.

Therefore, even without any additional operation after selecting a RF channel by inputting a number key, the user can directly confirm the number of  
15 programs running on the selected RF channel, in view of the program number of the program-being-watched and sub-channel symbols displayed on the display.

At steps 210 and 212, the microprocessor 124 determines whether a channel up/down key or a number key for designating a channel number has been inputted. The user can select a program of any other sub-channel by inputting  
20 the channel up/down key using the keypad 130 or the IR remote 132. When there is an input of the channel up/down key (step 210), the microprocessor 124 selects a program number designated by the channel up/down key, which precedes or follows the program number of the program-being-watched, and controls the TS decoder 108 to change the program-being-watched to a program

corresponding to the selected program number (step 214). The microprocessor 124 then returns to step 208.

For example, if the user inputs a channel up key in the state of display as shown in FIG. 3(a), the display will be changed to that of FIG. 3(b). FIG. 3(b) shows that the program number "40" selected by the channel up key is the second lowest number. If the user inputs a channel down key in the state of display as shown in FIG. 3(a), the highest program number represented by the first of the three sub-channel symbols ▲ will be displayed. At the same time, the remaining three program numbers will be indicated by the sub-channel symbol ▼ .

As described above, the user can easily confirm the number of programs running on a selected RF channel from the program number of the program-being-watched and sub-channel symbols displayed on the display, and thus can easily select a desired program using the channel up/down key.

15 If the user inputs a key designating a particular channel number at steps 210 and 212 in order to select another RF channel, the microprocessor 124 will return to step 202.

While the invention has been shown and described with reference to a certain preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims. Although only an application to a IIDTV receiver has been described above, the present invention is also applicable to all digital TV receivers. Also, although the preferred embodiment explained above enables the user to confirm



the number of programs running on a selected RF channel and select a desired program using the channel up/down key, it is possible to modify the invention to enable the user only to confirm the number of programs running on a selected RF channel. Therefore, the present invention is not to be unduly limited to the  
5 embodiment set forth herein, but to be defined by the appended claims and equivalents thereof.

#### **[EFFECTS OF THE INVENTION]**

In accordance with the present invention as described above, when a  
10 plurality of programs are being broadcasted on an RF channel, a program number of the program-being-watched and sub-channel symbols are displayed so that the user can easily confirm the number of the programs and select a desired program.

**[PATENT CLAIMS]**

1. A method for displaying channels in a digital television receiver,  
comprising the steps of:  
5 selecting an RF channel;  
when two or more programs are being broadcasted on the selected RF  
channel, selecting one of the programs as a program-being-watched; and  
displaying the program number of the program-being-watched and sub-  
channel symbols corresponding respectively to the program numbers of the  
10 remaining programs in numeric order on a display while the program-being-  
watched is running.
2. The method according to claim 1, wherein said sub-channel  
symbols are displayed in forms indicating an up or down direction from the  
15 program number of the program-being-watched.
3. The method according to claim 2, wherein said program number  
of the program-being-watched and said sub-channel symbols are arrayed in a  
particular direction on the display.  
20
4. The method according to claim 3, wherein said displaying step  
further includes displaying the number of said selected RF channel above the  
array of the program number and the sub-channel symbols on the display.

5. The method according to claim 2, wherein said program selecting step further includes selecting a program with the lowest program number as the program-being-watched, among said two or more programs.

5 6. The method according to claim 2, wherein said sub-channel symbols are displayed in a form of ▲ or ▼ indicating an up or down direction from the program number of the program-being-watched.

7. A method for displaying channels in a digital television receiver,  
10 comprising the steps of:

selecting an RF channel;

when two or more programs are being broadcasted on the selected RF channel, selecting one of the programs as a program-being-watched;

displaying the program number of the program-being-watched and sub-  
15 channel symbols corresponding respectively to the program numbers of the remaining programs in numeric order on a display while the program-being-watched is running; and

changing the program-being-watched to a program corresponding to a program number selected using a channel up/down key, among the program  
20 numbers displayed in the up or down direction from the program number of the program-being-watched.

8. The method according to claim 7, wherein said sub-channel symbols are displayed in forms indicating an up or down direction from the

program number of the program-being-watched.

9. The method according to claim 8, wherein said program number of the program-being-watched and said sub-channel symbols are arrayed in a particular direction on the display.

10. The method according to claim 9, wherein said displaying step further includes displaying the number of said selected RF channel above the array of the program number and the sub-channel symbols on the display.

10

11. The method according to claim 8, wherein said program selecting step further includes selecting a program with the lowest program number as the program-being-watched, among said two or more programs.

15 12. The method according to claim 8, wherein said sub-channel symbols are displayed in a form of ▲ or ▼ indicating an up or down direction from the program number of the program-being-watched.

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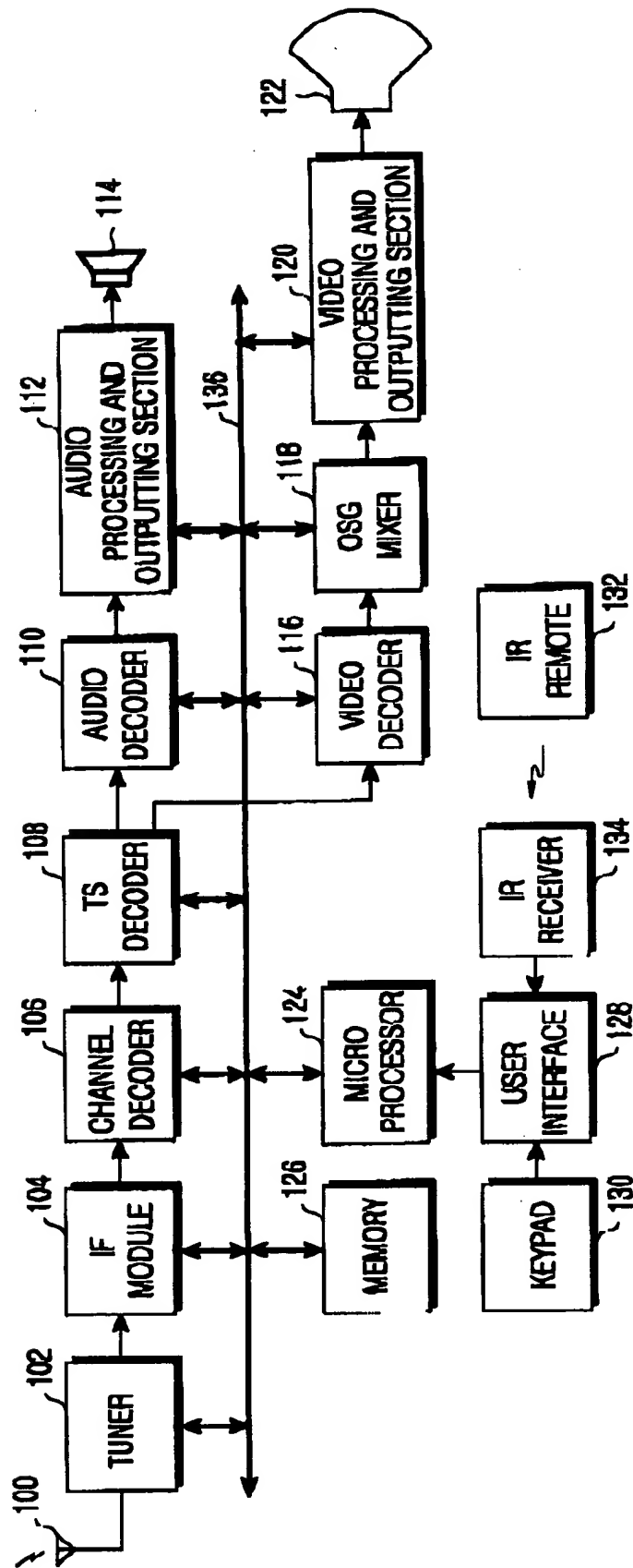


FIG.1

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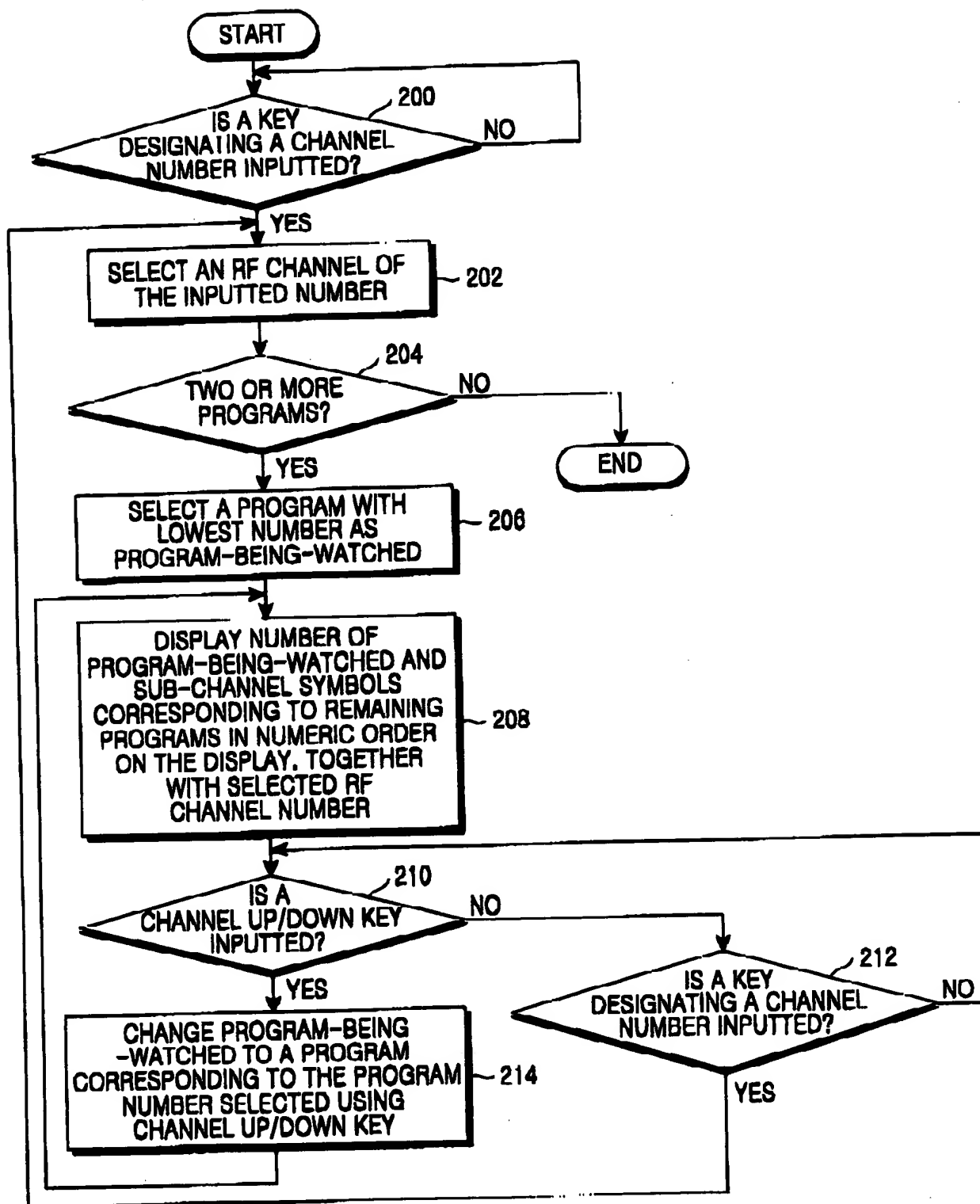
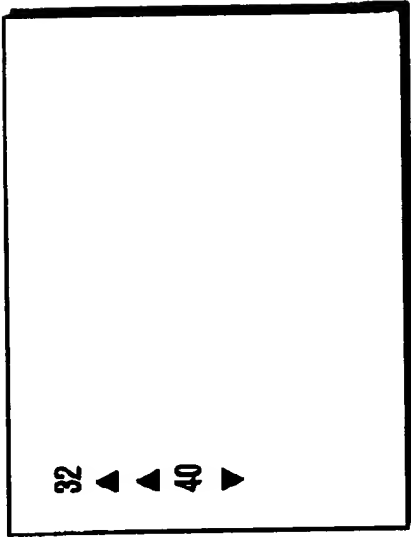


FIG.2

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(b)



(a)

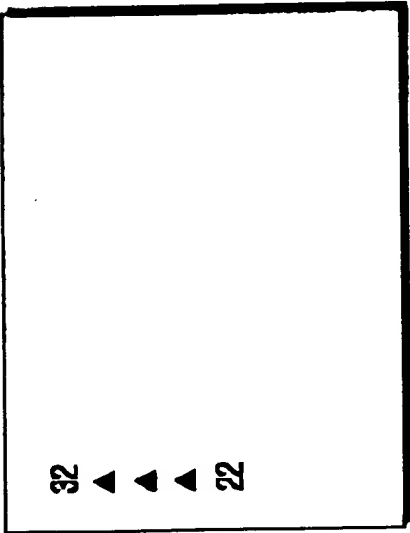


FIG.3

## CERTIFICATE OF TRANSLATION

As a below named translator, I hereby declare that my residence and citizenship are as stated below next to my name and I hereby certify that I am conversant with both the English and Korean languages and the document enclosed herewith is a true English translation of the Priority Document with respect to the Korean patent application No. 1997-29839 filed on 30 June 1997.

**NAME OF THE TRANSLATOR :** KIM, Sook-Hee

**SIGNATURE :** Sook Hee KIM

**Date :** 22 July, 2003

**RESIDENCE :** MIHWA BLDG., 110-2, MYONGRYUN-DONG 4-GA, CHONGRO-GU, SEOUL 110-524, KOREA

**CITIZENSHIP :** REPUBLIC OF KOREA



**[ABSTRACT OF THE DISCLOSURE]****[ABSTRACT]**

Disclosed is a method for displaying channel information in a digital television receiver for receiving digital multichannel TV broadcasts. The channel information displaying method enables a user to easily confirm programs being broadcasted on a selected RF channel. The method comprises the steps of confirming programs being broadcasted on a selected RF channel and displaying corresponding program numbers, together with the selected RF channel number, on a display of the digital TV receiver.

10

**[REPRESENTATIVE FIGURE]**

FIGURE 2

**[INDEX]**

15

**[SPECIFICATION]****[TITLE OF THE INVENTION]**

METHOD FOR DISPLAYING CHANNEL INFORMATION IN  
DIGITAL TELEVISION RECEIVER

5

**[BRIEF DESCRIPTION OF THE DRAWINGS]**

FIG. 1 is a block diagram of a HDTV receiver to which the present invention is applicable;

FIG. 2 is a flow chart showing a process performed by a microprocessor  
10 of FIG. 1 according to a preferred embodiment of the present invention; and

FIG. 3 shows an example of displaying channel information according to the preferred embodiment of the present invention.

**[DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT]**15 **[OBJECT OF THE INVENTION]****[RELATED FIELD AND PRIOR ART OF THE INVENTION]**

The present invention relates generally to a digital television ("TV") receiver for receiving digital multichannel TV broadcasts, and more particularly to a method for displaying channel information on a display of a digital TV  
20 receiver.

In analog TV broadcasting, such as NTSC (National Television System Committee) system based broadcasting, only a single program can be broadcasted on a fixed frequency bandwidth of one RF (radio frequency) channel.

By contrast, next-generation digital TV broadcasting, such as HDTV

(High Definition TeleVision) broadcasting, can deliver many more RF channels than the analog TV broadcasting. Also, digital TV broadcasting can flexibly assign appropriate bit rates to provided services, if required. In other words, a plurality of programs can be broadcasted within a limited transmission bandwidth of one RF channel. Thus, it is possible to broadcast SD (standard definition) programs, such as general analog TV broadcasting programs, on multiple channels in a particular time zone and HD programs on a single channel in another time zone. For example, according to the US ATSC (United States Advanced Television System Committee) standard, one RF channel equivalent to one analog channel is recommended to be subdivided into up to six sub-channels so that a digital TV can broadcast at least one HD program or up to 6 SD programs at the same time.

Since digital TV broadcasting transmits a plurality of programs on a single RF channel, it is required to display program guide information on a display of a digital TV receiver so that a user can select one of the plurality of programs. To this end, the ATSC standard defines an electronic program guide (EPG) to provide a method of selecting a program. That is, a TV station transmits EPG information of each RF channel. A digital TV receiver stores the received EPG information and displays it when the user wishes to see it.

From the EPG information, the user can confirm the number of programs being broadcasted on sub-channels of an RF channel. However, the user should separately select a display of the EPG information. In addition, it is troublesome to confirm the number of programs being broadcasted on a selected RF channel and select a desired program in digital broadcasting, as compared to

the existing analog TV broadcasting. Since a TV station may deliver both analog broadcasting and digital broadcasting, users may be further confused when selecting a channel and a program.

## 5 [SUBSTANTIAL MATTER OF THE INVENTION]

As described above, in digital multichannel TV broadcasts, it is required for a user to easily confirm programs being broadcasted on a selected RF channel.

It is, therefore, an object of the present invention to provide a method for displaying channel information in a digital TV receiver to enable a user to easily  
10 confirm the programs being broadcasted on a selected RF channel.

## [CONSTRUCTION AND OPERATION OF THE INVENTION]

In order to accomplish the object, the present invention provides a method for displaying channel information in a digital TV receiver, comprising  
15 the steps of confirming programs being broadcasted on a selected RF channel, and displaying corresponding program numbers, together with the selected RF channel number, on a display of the digital TV receiver.

Hereinafter, a preferred embodiment of the present invention will be described with reference to the accompanying drawings. Although certain  
20 processes or pictures are specifically exemplified in the following description of the present invention and in the drawings, it will be obvious to those skilled in the art that such examples are merely to improve understanding of the present invention and that the present invention is not limited to such specific examples. Also, in the following description of the present invention, a detailed description

of known functions and configurations incorporated herein will be omitted when it may make the subject matter of the present invention rather unclear.

FIG. 1 is a block diagram of a HDTV receiver adopting the MPEG (Moving Picture Expert Group) standard, to which the present invention is applicable. Referring to FIG. 1, a tuner 102 tunes an RF channel from broadcasting signals received through an antenna 100 under the control of a microprocessor 124, and outputs an intermediate frequency (IF) signal. An IF module 104 converts the IF signal into a baseband signal and outputs the baseband signal to a channel decoder 106. The channel decoder 106 decodes the baseband signal received from the IF module 104 and reproduces a data bit stream. The reproduced data bit stream is separated into audio data, video data and additional data by a TS (transport stream) decoder 108.

The audio data is applied to an audio decoder 110 to be decoded according to the MPEG standard or the Dolby AC-3 standard. An audio processing and outputting section 112 processes the decoded audio data and outputs it to a speaker 114. The video data is applied to a video decoder 116 to be decoded according to the MPEG standard. The decoded video data is applied to an OSG (On Screen Graphic) mixer 118 to be mixed with OSG data under the control of the microprocessor 124. A video processing and outputting section 120 processes the mixed data and outputs it to a display through a picture tube 122. The OSG data is required for the microprocessor 124 to display any information in the form of graphic or text on the display.

A keypad 130 and an IR (infrared) receiver 134 are connected to the microprocessor 124, which is a control section of the HDTV receiver, through a

user interface 128. The microprocessor 124 operates according to a command inputted from an IR remote 132 through the keypad 130 or the IR receiver 134, based on a program stored in a memory 126. The IR remote 132 can be a wireless mouse, such as an air mouse, or a remote controller (REMOCON). A  
5 command applied from the IR remote 132 is received as an IR signal by the IR receiver 134 and transmitted to the microprocessor 124 through the user interface 128. Also, additional data is applied to the microprocessor 124 from the TS decoder 108. The additional data includes EPG information as described above or PSI (program specific information) as defined in the MPEG standard.

10 The memory 126 comprises a ROM (read only memory) for storing a program of the microprocessor 124, a RAM (random access memory) for temporarily storing data according to the implementation of the program of the microprocessor 124, and an EEPROM (electrically erasable and programmable ROM) for storing various reference data.

15 The tuner 102, IF module 104, channel decoder 106, TS decoder 108, audio decoder 110, audio processing and outputting section 112, video decoder 116, OSG mixer 118, video processing and outputting section 120 and memory 126 as explained above are connected to each another via a bus 136 connected to the microprocessor 124.

20 FIG. 2 is a flow chart showing a process according to the preferred embodiment of the present invention which is applicable to a digital TV receiver, such as a HDTV receiver as explained above. The process as depicted in the flow chart includes the steps of confirming programs being broadcasted on a selected RF channel and displaying corresponding program numbers, together

with the selected RF channel number, on the display. The process is programmed in the ROM of the memory 126 to be implemented by the microprocessor 124.

The process for displaying channel information according to the preferred embodiment of the present invention will be explained in more detail with reference to FIGs. 1 and 2. When a user selects or moves to a particular RF channel (step 200), the microprocessor 124 undergoes step 202. The selection or change of channels is made by pressing a number key for inputting a desired channel number or a channel up/down key on the keypad 130 or the IR remote 132, or by implementing a channel prearrangement function.

At step 202, the microprocessor 124 confirms, from PSI or EPG information included in the additional data applied to the TS decoder 108, which programs are being broadcasted on the selected RF channel. At steps 204 and 206, the microprocessor 124 displays program numbers corresponding to the programs being broadcasted on the selected RF channel, together with the selected RF channel number, on the display, utilizing the OSG mixer 118.

FIG. 3 shows an example of displaying the program numbers and the selected RF channel number as channel information. Referring to FIG. 3, RF channel "32" is selected. Four programs with program numbers "201", "202", "203" and "204" (304, 306, 308 and 310) are being broadcasted on the RF channel "32". The program numbers 304, 306, 308 and 310 are displayed in numeric order in the horizontal direction, next to the RF channel number 302.

When moving to a particular channel, the user can easily confirm programs being broadcasting on that channel from displayed program numbers,

without the need to perform an additional operation.

If a predetermined period of time lapses after displaying the program numbers and the selected RF channel number at steps 204 and 206, the microprocessor 124 terminates the display of the program numbers and the  
5 selected RF channel number at step 208.

While the invention has been shown and described with reference to a certain preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended  
10 claims. Although only an application to a IDTV receiver has been described above, the present invention is also applicable to all digital TV receivers. Therefore, the present invention is not to be unduly limited to the embodiment set forth herein, but to be defined by the appended claims and equivalents thereof.

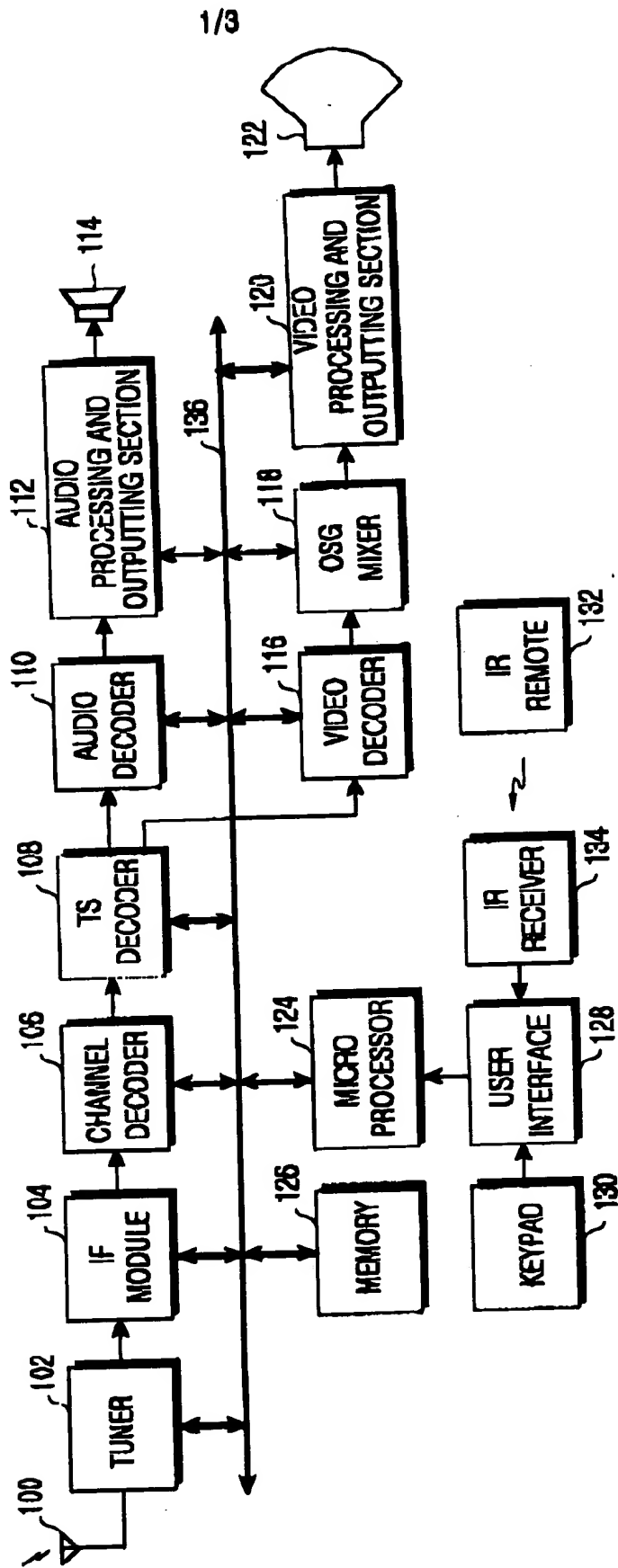
## 15 [EFFECTS OF THE INVENTION]

In accordance with the present invention as described above, when selecting or moving to a particular RF channel, the user can easily confirm programs being broadcasted on the selected RF channel.



**[PATENT CLAIMS]**

1. A method for displaying channel information in a digital TV receiver for receiving digital multichannel TV broadcasts, comprising the steps  
5 of:  
confirming programs being broadcasted on a selected RF channel; and  
displaying corresponding program numbers, together with the selected  
RF channel number, on a display of the digital TV receiver.
- 10 2. The method according to claim 1, wherein said confirming step  
includes confirming said programs from an EPG (electronic program guide)  
transmitted to said RF channel.
3. The method according to claim 1, wherein said confirming step  
15 includes confirming said programs from PSI (program specific information)  
transmitted to said RF channel.
4. The method according to claim 1, wherein said displaying step  
includes displaying said program numbers in numeric order next to said RF  
20 channel number.
5. The method according to claim 1, wherein said displaying step  
includes terminating the display of said program numbers and said RF channel  
number after lapse of a predetermined time period.



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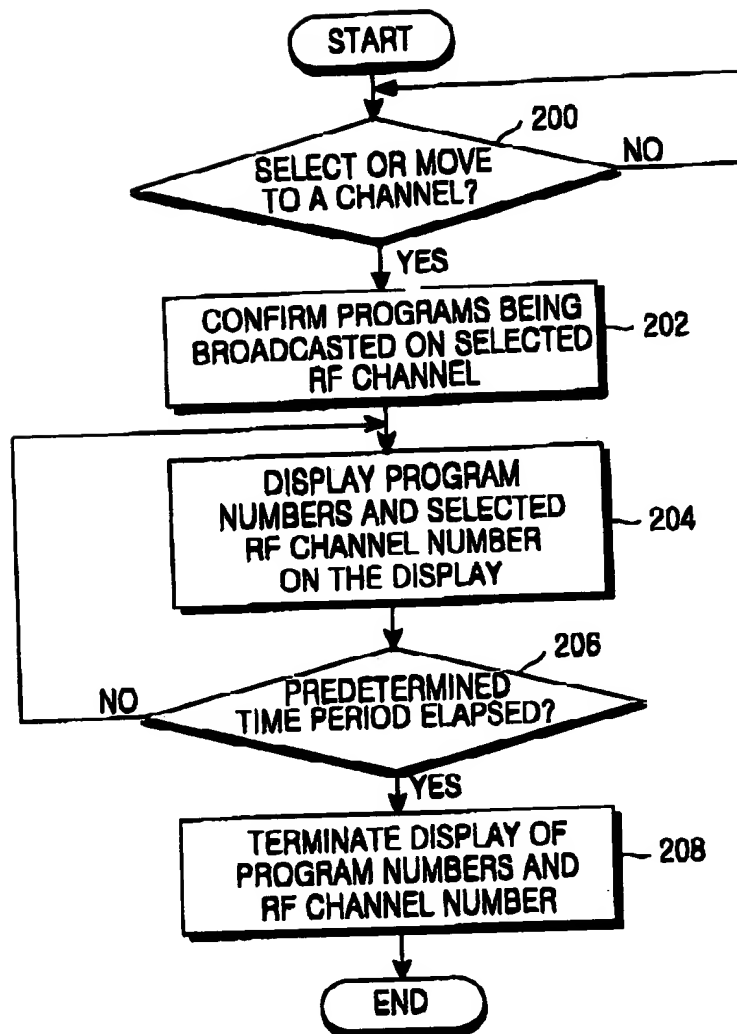


FIG.2

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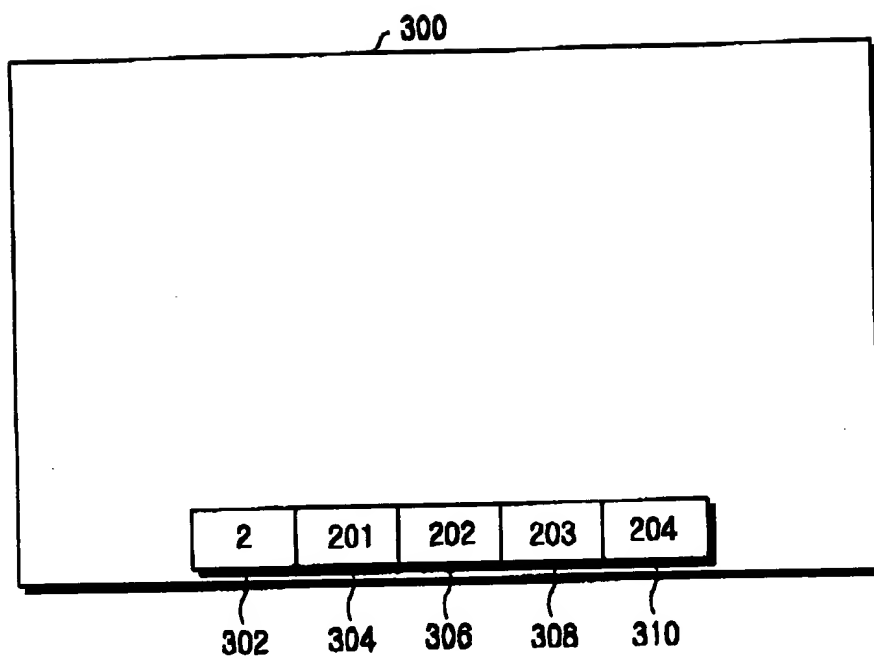



FIG.3

## CERTIFICATE OF TRANSLATION

As a below named translator, I hereby declare that my residence and citizenship are as stated below next to my name and I hereby certify that I am conversant with both the English and Korean languages and the document enclosed herewith is a true English translation of the Priority Document with respect to the Korean patent application No. 1997-32239 filed on 11 July 1997.

**NAME OF THE TRANSLATOR :** KIM, Sook-Hee

**SIGNATURE :** 

**Date :** 22 July, 2003

**RESIDENCE :** MIHWA BLDG., 110-2, MYONGRYUN-DONG 4-GA, CHONGRO-GU, SEOUL 110-524, KOREA

**CITIZENSHIP :** REPUBLIC OF KOREA

**[ABSTRACT OF THE DISCLOSURE]****[ABSTRACT]**

Disclosed is a method for selecting a channel in a multichannel TV receiver. The channel selecting method enables a user to more rapidly and easily select a channel in a multichannel TV receiver. The method comprises the steps of: displaying a particular number of channels covered by a bar in a multichannel display area on a display of the TV receiver in response to a user's command for channel selection; changing and displaying channels according to the movement of the bar; and tuning a channel selected by the user among the displayed channels.

**[REPRESENTATIVE FIGURE]****FIGURE 2****15 [INDEX]**

**[SPECIFICATION]****[TITLE OF THE INVENTION]****METHOD FOR SELECTING CHANNELS IN MULTICHANNEL  
TELEVISION RECEIVER**

5

**[BRIEF DESCRIPTION OF THE DRAWINGS]**

FIG. 1 is a block diagram of a HDTV to which the present invention is applicable;

FIG. 2 is a flow chart showing a process of selecting a channel according  
10 to a preferred embodiment of the present invention; and

FIG. 3 shows a channel selection menu displayed according to the preferred embodiment of the present invention.

**[DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT]**15 **[OBJECT OF THE INVENTION]****[RELATED FIELD AND PRIOR ART OF THE INVENTION]**

The present invention relates generally to a multichannel television ("TV") receiver, and more particularly to a method for selecting a channel in a multichannel TV receiver.

20

While traditional analog TV broadcasting service delivers TV programs on less than ten channels, multichannel TV broadcasting, such as cable or digital TV broadcasting, provides programs on a very large number of channels.

Accordingly, it is very difficult for a user to memorize all channels offered by multichannel TV broadcasting so as to directly select a particular

channel in a multichannel TV receiver. Also, it is time-consuming to search for and select a particular channel among a great number of channels, using a channel up/down key.

## 5 [SUBSTANTIAL MATTER OF THE INVENTION]

As described above, it is very difficult for a user to directly select a particular channel in a multichannel TV receiver. Also, it takes much time to select a particular channel among a great number of channels, using a channel up/down key.

10 It is, therefore, an object of the present invention to provide a method for rapidly and easily selecting a channel in a multichannel TV receiver.

## [CONSTRUCTION AND OPERATION OF THE INVENTION]

In order to accomplish the object, the present invention provides a  
15 method for selecting a channel in a multichannel TV receiver, comprising the steps of: displaying a particular number of channels covered by a bar in a multichannel display area on a display of the TV receiver, in response to a user's command for channel selection; changing and displaying channels according to the movement of the bar; and tuning a channel selected by the user among the  
20 displayed channels.

Hereinafter, a preferred embodiment of the present invention will be described with reference to the accompanying drawings. Although certain process and picture are specifically exemplified in the following description of the present invention and in the drawings, it will be obvious to those skilled in



the art that such examples are merely to improve understanding of the present invention and that the present invention is not limited to such specific examples. Also, in the following description of the present invention, a detailed description of known functions and configurations incorporated herein will be omitted when it may make the subject matter of the present invention rather unclear.

FIG. 1 is a block diagram of a HDTV, one of next-generation multichannel TVs, to which the present invention is applicable. Referring to FIG. 1, a tuner 102 tunes an RF channel selected by the user from broadcasting signals received through an antenna 100 under the control of a microprocessor 124, and outputs an intermediate frequency (IF) signal. An IF module 104 converts the IF signal into a baseband signal and outputs the baseband signal to a channel decoder 106. The channel decoder 106 decodes the baseband signal received from the IF module 104 and reproduces a transport stream (TS).

A TS decoder 108 separates an audio stream and a video stream of a program selected by the user from the TS and outputs the separated streams under the control of the microprocessor 124.

The audio stream is applied to an audio decoder 110 to restore audio data. An audio processing section 112 processes the restored audio data and outputs it as a sound signal to a speaker 114. The video stream is applied to a video decoder 116 to restore video data. The restored video data is applied to an OSG (On Screen Graphic) mixer 118 to be mixed with OSG data under the control of the microprocessor 124. A video processing section 120 processes the mixed data and outputs it as a video signal to a picture tube 122.

The microprocessor 124 operates according to a command inputted from

a keypad 128 or a pointing device 130 through a user interface 134, based on a program stored in a memory 126. A command applied from the pointing device 130 is received as an IR signal by the IR receiver 132 and transmitted to the user interface 134. Also, additional data, including EPG information, is applied to the microprocessor 124 from the TS decoder 108 so that the microprocessor 124 can detect information about all channels on which programs are being broadcasted.

The memory 126 comprises a ROM (read only memory) for storing a program of the microprocessor 124, a RAM (random access memory) for temporarily storing data according to the implementation of the program of the microprocessor 124, and an EEPROM (electrically erasable and programmable ROM) for storing various reference data.

A process of selecting a channel according to the preferred embodiment of the present invention will be described in more detail with reference to FIG. 2. At step 136, the microprocessor 124 determines whether the user has inputted a command to display a channel selection menu by operating the keypad 128 or the pointing device 130. If such a command has been inputted, the microprocessor 124 will proceed with step 140. Otherwise, the microprocessor 124 will proceed with step 138.

At step 140, the microprocessor 124 displays the channel selection menu which consists of a channel window 150 and a scroll bar window 152 as shown in FIG. 3. The channel window 150 displays channels included in a channel area covered by a scroll bar 158. The scroll bar window 152 has an up arrow button 154 and a down arrow button 156 at the top and bottom thereof. The up

arrow button 154 and the down arrow button 156 are used to move the scroll bar 158 up or down by one channel within the channel area.

The channel area between the up arrow button 154 and the down arrow button 156 corresponds to the number of channels detected by the 5 microprocessor 124. The lower end of the up arrow button 154 corresponds to the first channel in the channel area, whereas the upper end of the down arrow button 156 corresponds to the last channel. The scroll bar 158 can move up or down within the channel area which includes a particular number of channels. Channels included in the channel area covered by the scroll bar 158 are displayed 10 in the channel window 150.

The user can drag and move the scroll bar 158 using the pointing device 130. When the user clicks an area where the scroll bar 150 is not positioned, the scroll bar 150 moves to the clicked position. Also, when the user clicks the up arrow button 154 or the down arrow button 156 using the pointing device 130, 15 the scroll bar 158 moves up or down by one channel.

After displaying the channel selection menu, the microprocessor 124 proceeds with step 142 for detecting a movement of the scroll bar 142. If the scroll bar 158 moves according to the operation of the pointing device 130, the microprocessor will proceed with step 144. Otherwise, the microprocessor 124 20 will proceed with step 146.

At step 144, the microprocessor 124 displays channels, which are included within an area covered by the moved scroll bar 142, in the channel window 150 and proceeds with step 146.

At step 146, the microprocessor 124 determines whether the user clicks

and selects one of the channel numbers listed in the channel window 150 using the pointing device 130. If a channel is selected, the microprocessor 124 will proceed with step 148. Otherwise, the microprocessor 124 will proceed with step 142 for displaying channels in another channel area according to the movement of the scroll bar 158.

At step 148, the microprocessor 124 tunes a channel selected by the user.

As described above, according to the present invention, the user can first select a channel area including a plurality of channels by moving a scroll bar and then select a desired channel among the channels displayed in the channel area.

10 The present invention enables the user to rapidly and easily select a channel, when compared to direct channel selection or selection using a channel up/down key.

While the invention has been shown and described with reference to a certain preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims. Therefore, the present invention is not to be unduly limited to the embodiment set forth herein, but to be defined by the appended claims and equivalents thereof.

20

#### **[EFFECTS OF THE INVENTION]**

In accordance with the present invention as described above, it is possible to rapidly and easily select a channel in a multichannel TV receiver.

**[PATENT CLAIMS]**

1. A method for selecting a channel in a multichannel TV receiver,  
comprising the steps of:
  - 5 displaying a particular number of channels covered by a bar in a  
multichannel display area on a display of the TV receiver, in response to a user's  
command for channel selection;  
changing and displaying channels according to the movement of the bar;  
and  
10 tuning a channel selected by the user among the displayed channels.

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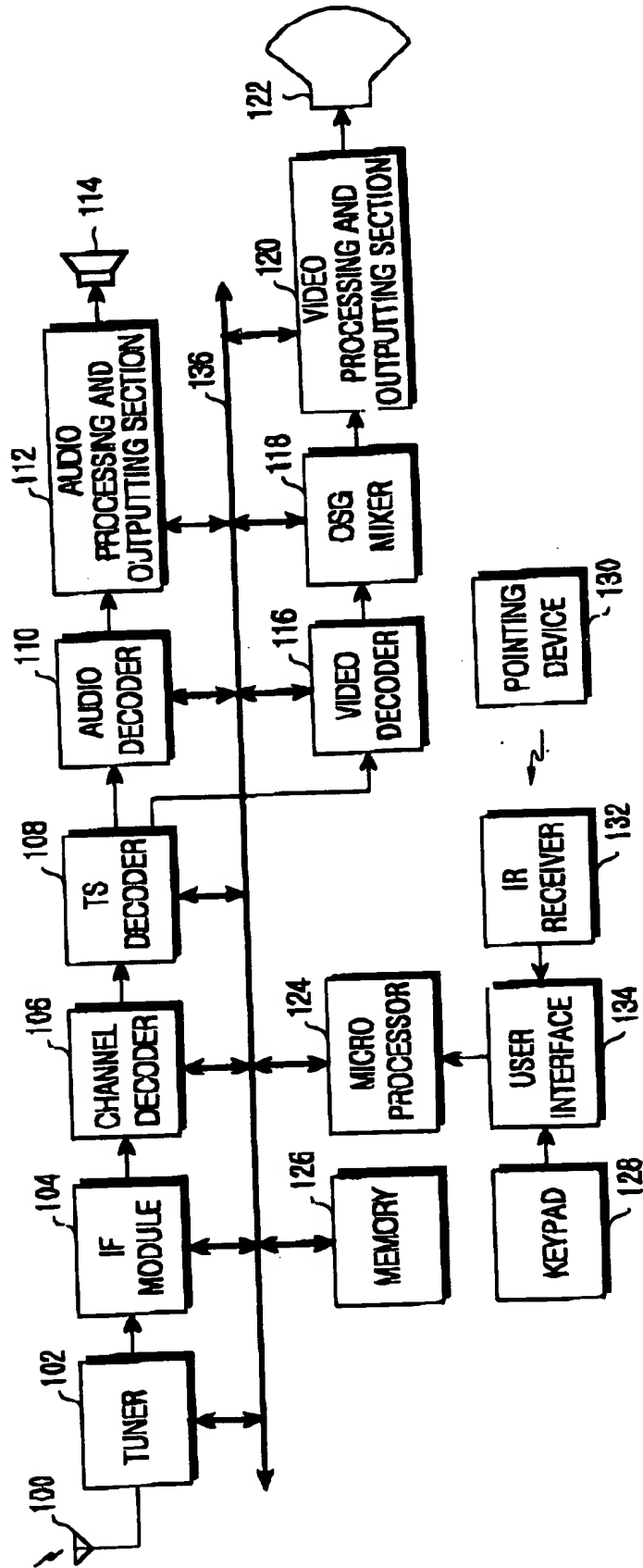


FIG.1

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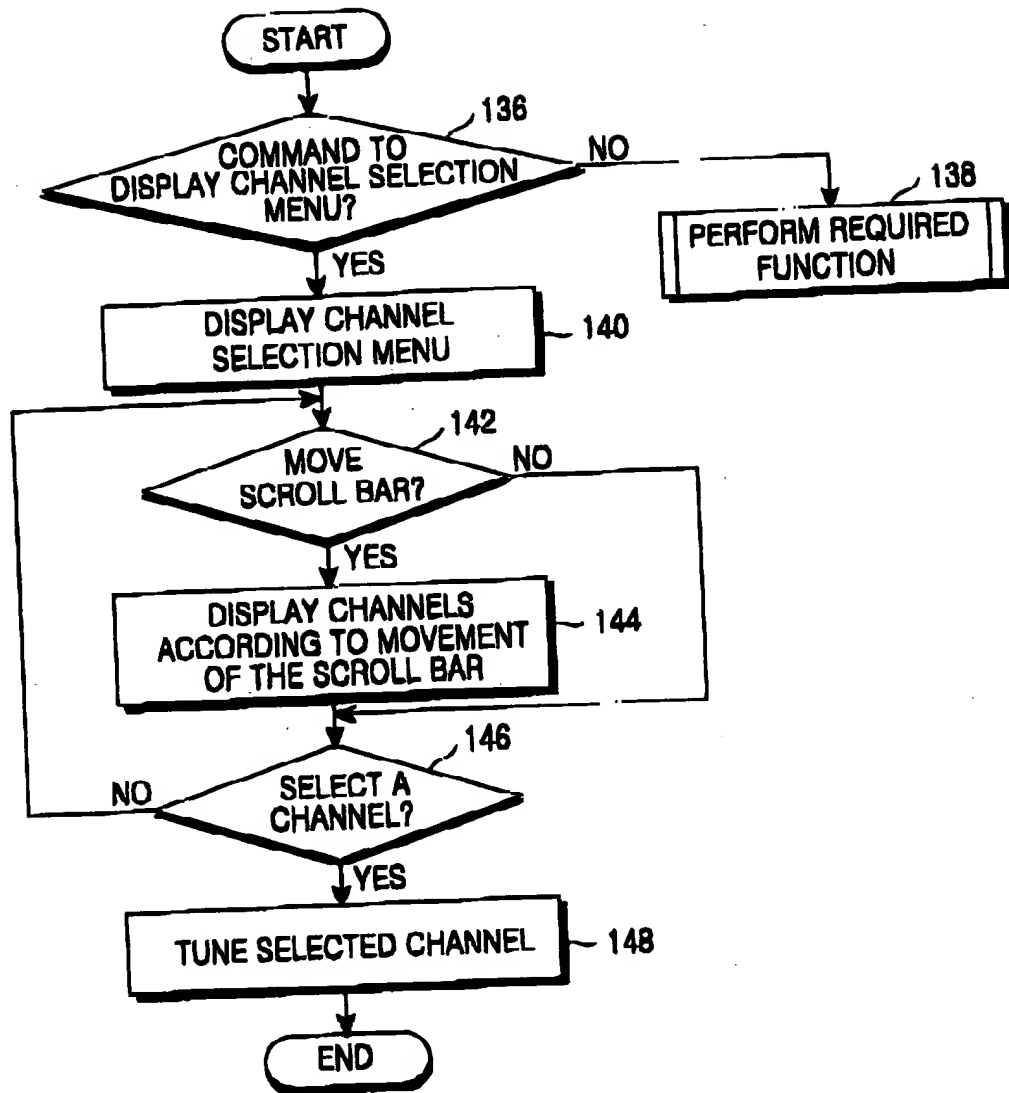


FIG.2

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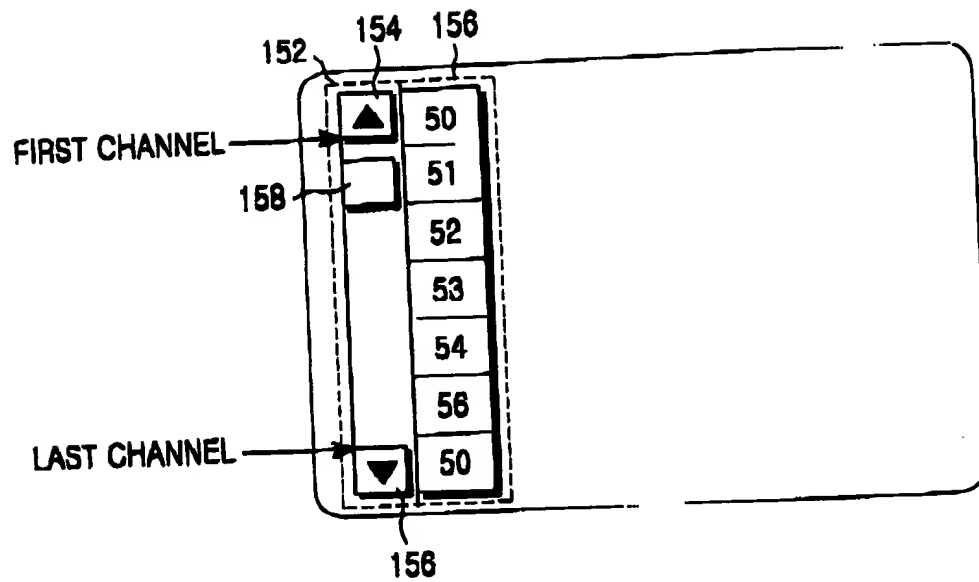


FIG.3